

# PROFESSOR PAC-MAN

## GAME OPERATION

PROFESSOR PAC-MAN is a one or a two player game with a color T.V. monitor. The game gives a display which has all the parts shown in Figure 1-1.

The game has five possible modes of operation: ATTRACT, READY-TO-PLAY, PLAY, HIGH SCORE/INITIAL, and SELF-TEST.

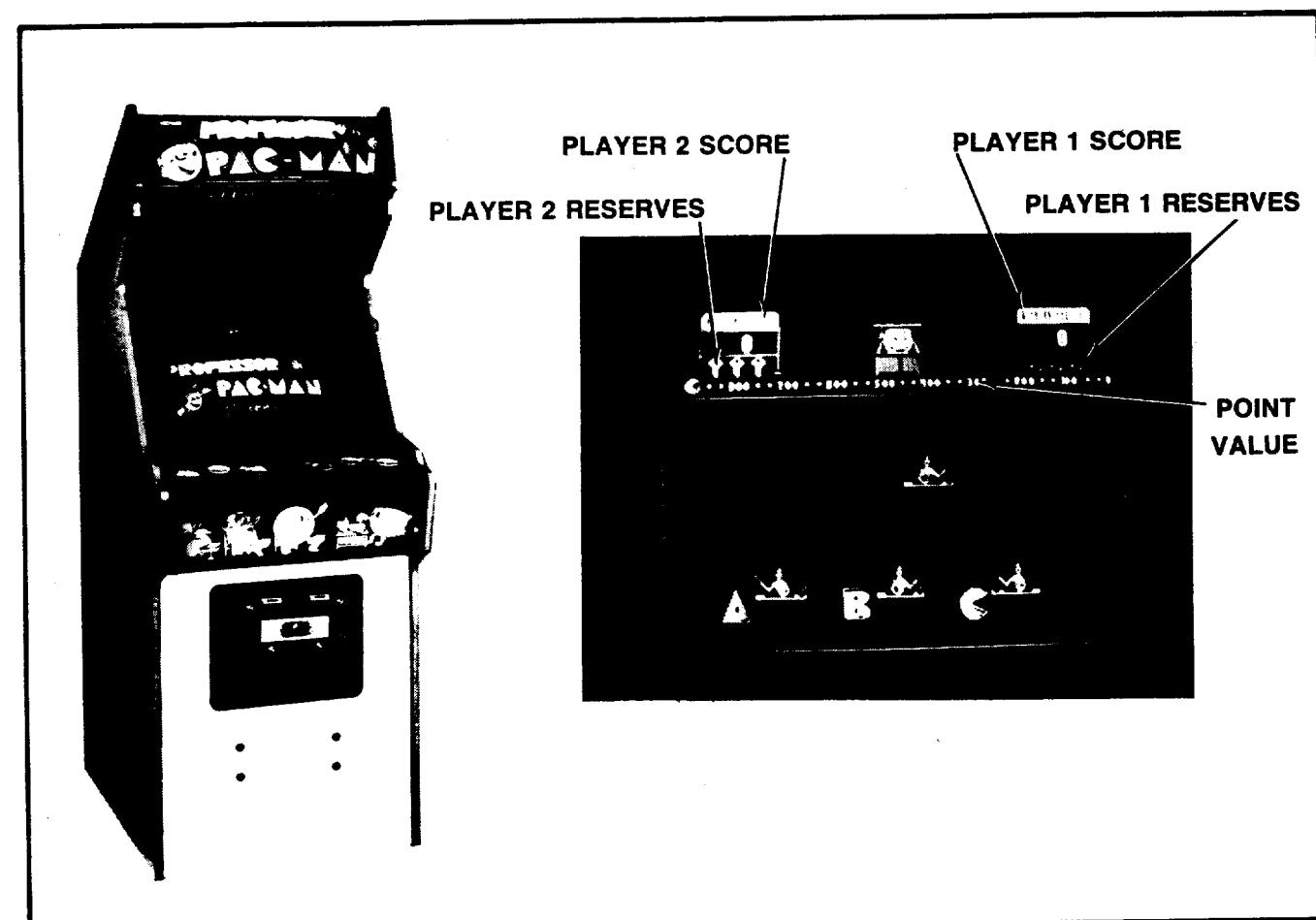


Figure 1-1 On Screen Graphics During Play

**WARNING**  
**THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY  
 RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.**

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## SELF-TEST MODE

The Self-Test mode is a special mode for checking the game switches and computer functions. It is the easiest and best way to check for proper operation of the entire game.

When in the Self-Test mode you will see a CURSOR (arrow pointing to the right) at the left edge of the monitor screen. To position the CURSOR, use the right hand (1 PLAYER) "A" — "B" — "C" Control Buttons. The "B" Button is used to select/exit a function indicated by the CURSOR. The "A" Button is used to move the CURSOR up the left hand side of the monitor screen while the "C" Button is used to move the CURSOR down the left hand side of the monitor screen.

To exit the Self-Test mode, turn the Self-Test Switch to the "OFF" position, move the CURSOR to any of the following words: "REPEAT", "RETURN", or "EXIT" (the exact wording depends on the test level you are in), and press the "B" Button.

Displays of test results will generally take one of two forms: 1) a display of colored rectangles, or 2) the words "GOOD", "BAD" or "OK". In the colored rectangle displays, generally GREEN means GOOD and RED means BAD. Failures of any of the CIRCUITRY TESTS will probably require P.C. Board swapping in the field to determine the defective Board which can then be repaired later.

### SPECIAL NOTE

In the ROM TESTS-SUPER GAME CARD, empty EPROM Sockets X10 through X17 (displayed as "K" through "S" in the test) may be indicated to be "EMPTY" or "BAD". Either indication is correct because there is nothing (no electronic parts) in these positions.

The Self-Test mode is fairly self-explanatory. You may begin a Self-Test at any time after the power to the game is on by sliding the Self-Test switch to the "ON" position. Now that the game is in the Self-Test mode, the functions it will perform can best be seen if given in outline form. They will then each be explained individually.

**NOTE:** Putting the game into Self-Test WILL NOT cause it to erase any CREDITS it has on it from its memory.

### I. CIRCUITRY TESTS

- A. 16-COLOR BOARD TESTS
  - 1. WRITE MODES
  - 2. INTERCEPT
- B. RAM TESTS
  - 1. SCREEN RAM
  - 2. SCRATCH PAD
  - 3. WRITE-PROTECT
- C. ROM TESTS
  - 1. SUPER GAME CARD
  - 2. 16K CARD
- D. CONTINUOUS TEST
  - 1. START NEW TEST
  - 2. CONTINUE PREVIOUS TEST

### II. VIDEO TEST/ADJUST

- A. CROSS HATCH
- B. COLOR BARS
- C. GREY LEVELS
- D. PURITY

### III. AUDIO/MECHANICAL

- A. SOUNDS
- B. SWITCHES
- C. DEVICES
  - 1. COINCTR1
  - 2. COINCRT2
  - 3. LED1
  - 4. LED2
  - 5. LEFT LAMP A
  - 6. LEFT LAMP B
  - 7. LEFT LAMP C
  - 8. RIGHT LAMP A
  - 9. RIGHT LAMP B
  - 10. RIGHT LAMP C

### IV. STATISTICS

- A. TIME INDEX 1 PLYR
- B. TIME INDEX 2 PLYR
- C. SCORE INDEX
- D. CLEAR STATISTICS

### V. GAME SETTINGS

- A. SHILL SOUNDS
- B. FREE PLAY
- C. DOOR1—CO/CR
- D. DOOR2—CO/CR
- E. #FRUITS
- F. BONUS EVERY
- G. STARTING DIF
- H. INCREMENTAL DIF
- I. DEFAULTS

## EXPLANATION OF SELF-TEST FUNCTIONS

### I. CIRCUITRY TESTS

**THE 16 COLOR BOARD TESTS** check the majority of the circuitry on the SCREEN RAM and CPU boards.

**THE RAM TESTS** check the SCREEN RAM on the SCREEN RAM BOARD and the STATIC RAMS on the SUPER GAME MEMORY BOARD.

**THE ROM TEST** display will vary depending on the position of Setting Switch #5 on the GAME I/O BOARD. Initially, the game is manufactured using EPROM's and the required memory is split between the SUPER GAME MEMORY BOARD and the 640K EPROM BOARD. Later production will have ROM's. The position of the Setting Switch **WILL NOT** affect the operation of the game, only the manner in which the ROM TESTS are displayed. To properly display the ROM TEST for the BOARDS that you have in your games card rack, make sure Setting Switch #5 is set properly. (See DIP SWITCH SETTINGS under "SWITCHES" heading.)

**THE CONTINUOUS TEST** is generally used to test a game over night for heat related problems. Two options are available: 1) START NEW TEST resets the pass counter, error counter and reset counter, and 2) CONTINUE PREVIOUS TEST causes previous test to be continued without resetting the above mentioned counters. After each complete cycle of the CONTINUOUS TEST, the results are displayed. Also, by depressing and holding down the SELECT ONE PLAYER GAME BUTTON during a CONTINUOUS TEST, an almost immediate display can be obtained (the individual test that is running **MUST** be complete). Releasing the Button causes the CONTINUOUS TEST to proceed.

### II. VIDEO TEST/ADJUST

These displays are used for adjusting the monitor in the game. Use the CROSS HATCH to adjust horizontal and vertical linearity, horizontal and vertical size, and convergence. Use COLOR BARS to verify that all three color guns are functioning. Use the GREY LEVELS to adjust overall brightness. Block 0 should be BLACK and block 15 should be WHITE. Each block from 0 to 15 should be progressively brighter.

### III. AUDIO/MECHANICAL

These tests are designed to check all cabinet input and output devices for proper operation.

**SOUNDS:** Three tones are generated in each Audio Channel at the **SAME** time. Both channels should be at the **SAME** volume if the Volume Control Pots are set the same.

**SWITCHES:** This test is to verify that all Switches are functioning. Each rectangle represents a different Switch. The color of the rectangle should change from RED (for OFF) to GREEN (for ON) as each switch is actuated. Each Switch in the game is identified above its respective rectangle. The designation table follows.

- c1 - Coin Switch #1 (Left)
- c2 - Coin Switch #2 (Right)
- ts - Test Switch
- sl - Slam Switch (Tilt)
- 1p - Select 1 Player Game
- 2p - Select 2 Player Game
- la - Left Player A Button
- lb - Left Player B Button
- lc - Left Player C Button
- ra - Right Player A Button
- rb - Right Player B Button
- rc - Right Player C Button

**DIP SWITCH SETTINGS:** The designation table for the 8 position DIP SWITCH PACK located on the game I/O BOARD in the CARD RACK follows.

- ct - Cocktail Table
  - Switch Position #1 to "ON" = Cocktail Table Game
  - Switch Position #1 to "OFF" = Upright Game
- rs - Reset
  - Switch Position #2 to "ON" = Clears ALL Data (Score Index, Time Index, High Scores and Programmable Options whenever Game is turned "OFF" and then back "ON" again
  - Switch Position #2 to "OFF" = Does NOT reset data whenever Game is turned "OFF" and then back "ON" again
- lk - Lockup
  - Switch Position #3 to "ON" = Halt on error during CONTINUOUS TEST
  - Switch Position #3 to "OFF" = Does NOT halt on error, CONTINUOUS TEST goes on
- bp - Beep
  - Switch Position #4 to "ON" = Game gives audio response to test results—a HIGH pitched beep means good or OK and a LOW pitched beep means bad or error
  - Switch Position #4 to "OFF" = No audio response to test results
- rm - ROM
  - Switch Position #5 to "ON" = game uses 32K ROM's and displays test results accordingly
  - Switch Position #5 to "OFF" = game uses 8K and 16K ROM's and displays test results accordingly
- s6 - Switch Position #6 NOT USED
- s7 - Switch Position #7 NOT USED
- s8 - Switch Position #8 NOT USED

**DEVICES:** These tests check all Output Devices. When a particular test is chosen by positioning the cursor in front of the desired DEVICE to be tested and the Right Hand Player's "B" Button is pressed, the cursor disappears and the chosen DEVICE pulse "ON" and "OFF" at a rate of about once per second. Depressing the above mentioned "B" Button again causes the cursor to re-appear and the selected DEVICE should be in the "OFF" state. Games are shipped with only one Coin Counter. However, driver circuitry is provided for an OPTIONAL second Coin Counter. Therefore, on standard games, this test provides NO visual or audible output unless the Operator has installed the second Coin Counter.

#### IV. STATISTICS

These displays provide the Operator with information concerning playing times and scoring levels. This should prove useful in determining optimum Difficulty and Bonus Level Settings. The game keeps track of time and score for each game played and at the end of each game it updates the information used to create each of these displays.

**TIME INDEX—1 PLR:** In 90 second increments, displays the number of one player games played that fall into each category as well as the total number of one player games played.

**TIME INDEX—2 PLR:** In 180 second increments, displays the number of two player games played that fall into each category as well as the total number of two player games played.

**SCORE INDEX:** In 5000 point increments, displays the number of players that have achieved a final score that falls into each category. For example: if a two player game is played and one player finished with a score of 3456 and the second player finishes with a score of 2345, the number in the range of "0—5K" will increase by two. However, if player two had finished with a score of 6789, then the number in the range of "0—5K" will only increase by one and the number in the range of "5K—10K" will also increase by one.

**CLEAR STATISTICS:** This allows the Operator to clear the Time and Score Indexes individually. All-time high scores and initials **CAN NOT** be cleared using this routine.

#### V. GAME SETTINGS

**SHILL SOUNDS:** When the game is not being played and this feature is "ON", at the beginning of the attract sequence a musical tune is played to attract attention to the game. If this feature is not desired in quiet locations, it may be turned "OFF".

The "B" Button is used to select/exit this function and the "C" Button may be used to turn it "OFF" (The "A" Button is used to turn it "ON".)

**FREE PLAY:** When this feature is "ON", no coins are required to play the game and the monitor screen displays this message "FREE PLAY, SO HIT THE BUTTON". The "B" Button is used to select/exit this function and the "C" Button may be used to turn it "OFF". (The "A" Button is used to turn it "ON".)

**DOOR1—CO/CR // DOOR2—CO/CR:** This allows the Operator to set the numbers of coins required for a given number of credits. It is totally adjustable for any combination from 1 coin for 1 credit to 1 coin for 9 credits. The reverse is also true. The game can be set up to require as many as 9 coins to give 1 credit or 2 credits, etc. Any combination of numbers is possible with a little experimentation. For example: if the game were set for 3/3 it would be the same as 1/1. Also, if the game were set for 2/3, one credit would be issued for the first coin and two credits would be issued for the second coin. **HOWEVER**, if a game were played and completed **BETWEEN** when the first and second coins were inserted, the second coin would only give one credit and a third coin would be required to get the next additional two credits. The game keeps track of fractions of a coin but clears the fraction at the end of the game.

The "B" Button is used to select/exit this function. The 2 PLAYER Button selects the COINS half of the option (the number to the left of the "/") and the 1 PLAYER Button selects the CREDITS half of the option (the number to the right of the "/"). The "A" Button may be used to make the number go higher in value while the "C" Button may be used to make the number go lower in value.

**# FRUITS:** The number of FRUITS is the number of wrong answers a player is allowed at the start of a game. The "B" Button is used to select/exit this function. The "A" Button may be used to make the number go higher in value while the "C" Button may be used to make the number go lower in value.

**BONUS EVERY:** A BONUS question is given to a player every so often for answering a certain number of questions without a wrong answer (and without being interrupted by a correct answer provided by the other player in a TWO PLAYER game). It should also be noted that to increase the difficulty level of the game automatically, after the number of questions asked and answered is 30, the game adds two to the programmed number of questions that must be answered correctly without a wrong answer before the player will get another BONUS question.

For example, the default value is three. **AFTER** answering 3 questions in a row correctly, the player gets a **BONUS** question. After the 30th question is asked, the player **WILL NOT** get any BONUS questions until he answers 5 questions in a row correctly. **AFTER** the next 30 questions are asked he would have to answer 7 questions in a row correctly to get a BONUS question—and so on.

A player **DOES NOT** lose a FRUIT if he answers a BONUS question incorrectly. If he answers it correctly, he is awarded double the score of the question and is given an additional FRUIT.

The "B" Button is used to select/exit this function. The "A" Button may be used to make the number go higher in value while the "C" Button may be used to make the number go lower in value. For this option, **ONLY** the values 2, 3, 4, 5, and 6 are allowed as initial settings.

**STARTING DIFF:** The difficulty level of the game is controlled in several ways. Certain questions are inherently more difficult than others i.e. sequences of six objects are more difficult than sequences of four objects. Also, as the degree of difficulty increases, the Pac-Man that eats the score value dots across the top of the screen increases his speed so that there is less time to answer.

On a scale of 1 to 9, 1 is the **EASIEST** and 9 is the **MOST DIFFICULT** level of play. The setting of this option only sets the degree of difficulty the game **STARTS** at. The "B" Button is used to select/exit this function. The "A" Button may be used to make the number go higher in value while the "C" Button may be used to make the number go lower in value.

**INCREMENTAL DIFF:** How quickly the game gets more difficult is controlled by this setting. A setting of 1 would cause the game to take a **longer** time to get to the next level of difficulty while a setting of 9 would cause the game to take a **shorter** time to get to the next level of difficulty. The "B" Button is used to select/exit this function. The "A" Button may be used to make the number go higher in value while the "C" Button may be used to make the number go lower in value.

**DEFAULT:** The games **DEFAULT** settings are the factory recommended settings and are as follows:

SHILL SOUNDS are OFF  
FREE PLAY is OFF  
DOOR1—CO/CR is 1/1  
DOOR2—CO/CR is 1/1  
# FRUITS is 3  
BONUS EVERY 3 QUESTIONS  
STARTING DIFF is 3  
INCREMENTAL DIFF is 3

Depressing the "B" Button while "**DEFAULTS**" is selected will change the display to the above settings. The word "**SET**" will also be displayed to the right of the word "**DEFAULTS**" for about two seconds to alert the operator that the settings have been changed.

When finished with the Self-Test mode, slide the Self-Test switch back to the "OFF" position. To exit the Self-Test mode after the Self-Test Switch is in the "OFF" position, move the CURSOR to any of the following words: "**REPEAT**", "**RETURN**", or "**EXIT**" (the exact wording depends on the test level you are in), and press the "B" Button.

Normal game functions will now return to the monitor screen.

#### ATTRACT MODE

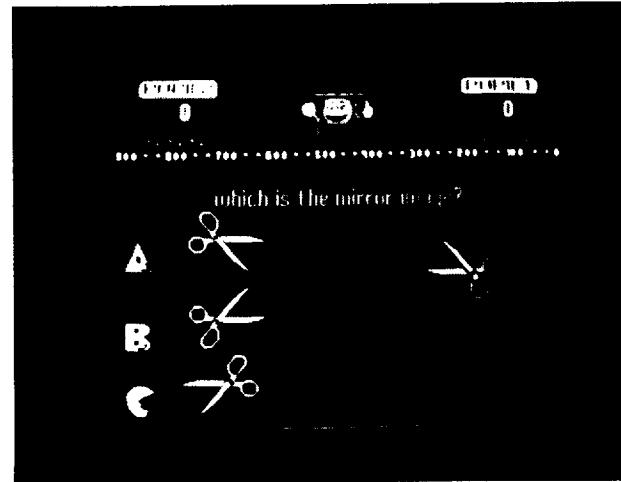
1. The Attract mode starts:

- Just after power has been turned on to the game. (Self-Test switch is in the "OFF" position.)
- After a Self-Test has been completed. (Performing a Self-Test **DOES NOT** set the credits in the games memory to zero "0".)
- After a play has been finished, the score was not high enough to put the game into the High Score/Initial mode, and there are no more credits left in the games memory.
- After the High Score/Initial mode when there are no more credits left in its memory.
- In the Attract mode, the game will give the following displays **centered** on the monitor screen:

insert coin to start

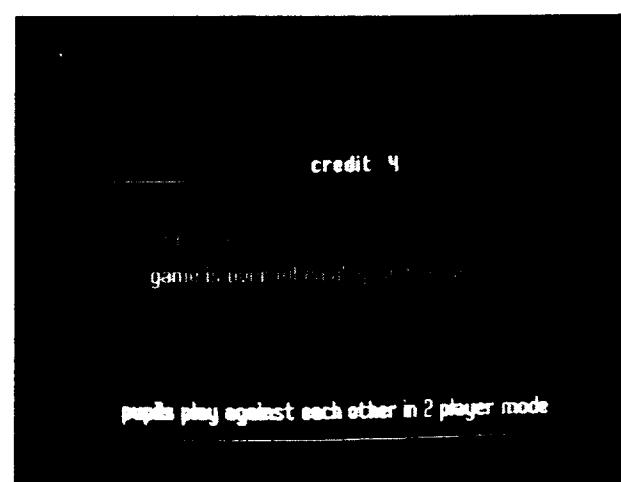


Attract Mode Display 1



Attract Mode Display 2

No matter where the game is in the Attract mode sequence, it will immediately go to the following display as soon as a game has been paid for.



Ready to Play Mode Display

## READY-TO-PLAY MODE

1. The Ready-To-Play mode starts when enough coins have been accepted for a 1 or a 2 player game.
2. The Ready-To-Play mode ends when either the "1 PLAYER" or the "2 PLAYER" push button is pressed.
3. In the Ready-To-Play mode, the game will give the above displays *centered* on the monitor screen.
4. If no START button is pressed, the displays will remain indefinitely as shown above.

## PLAY MODE

**PROFESSOR PAC-MAN** is a game of observation skill designed for either 1 or 2 players. After a question is displayed the player must answer correctly to receive a score. A player's score is shown within the blackboard assigned to him. Player 1's blackboard is in the upper right hand corner of the monitor screen and player 2's blackboard is in the upper left hand corner of the monitor screen. A FRUIT symbol and a number are displayed next to each player's blackboard. The number indicates the quantity of incorrect answers a player has left **BEFORE** the game is over for that particular player. The FRUIT symbol indicates the level of difficulty that that particular player has achieved at any point in the game.

Professor Pac-Man is seated at the desk in the top center of the monitor screen and he displays the number of questions that have been asked so far this game (including BONUS QUESTIONS). Below Professor Pac-Man is a row of dots representing the score for the current question and indirectly the time remaining to answer the current question.

After the current question is asked, a Pac-Man starts eating the dots from left to right. When the question is answered, the Pac-Man stops eating the dots and his position is relative to the score that is awarded if the question is answered correctly. If the question was answered incorrectly, Pac-Man will continue eating dots until the question is answered correctly (you are allowed 2 tries) or until he eats the last dot—which is equal to zero points and is the "time up point".

The maximum number of points that can be awarded is "900" and the minimum is "0". As the game progresses in difficulty, the amount of time it takes Pac-Man to eat all the scoring dots gets shorter and shorter until, at the most difficult level of play, he eats them all in about 3 seconds.



Bonus questions are awarded if a player answers a given number of questions in a row correctly—no mistakes. The given number of questions that the player must answer before he gets a bonus question is Operator selectable during the Self-Test mode. A correct answer to a bonus question is rewarded by giving the player two times the score value attained plus a BONUS FRUIT. A player is allowed **ONLY 1 CHANCE** to answer a bonus question correctly. However, an incorrect answer to a bonus question **DOES NOT** penalize the player by subtracting a Fruit.

Certain factors differ between 1 and 2 player games so each will be covered by itself later in this text.

## ONE PLAYER GAME

In the **ONE PLAYER GAME**, the player is challenging himself to answer correctly and quickly to achieve a high score. As each question is asked, the player is permitted two chances to answer correctly. If the player fails to respond to a question, a Fruit is subtracted from the player. The *first time* within a question that a player answers incorrectly, a Fruit is subtracted. If time still remains, the player can try to answer again. However, if he **DOES NOT** try to answer again and time runs out, another Fruit **WILL NOT** be subtracted from him. **BUT**—if the player does have enough time—and tries to answer the question the *second time*—but is still incorrect, **ANOTHER** Fruit **WILL** be subtracted from him.

*It is to the players advantage NOT to try to answer ANY question the second time if he is not 100% sure of the answer because he will not be penalized again if he doesn't try. But he will be penalized for another wrong attempt which turns out to be wrong.*

## TWO PLAYER GAME

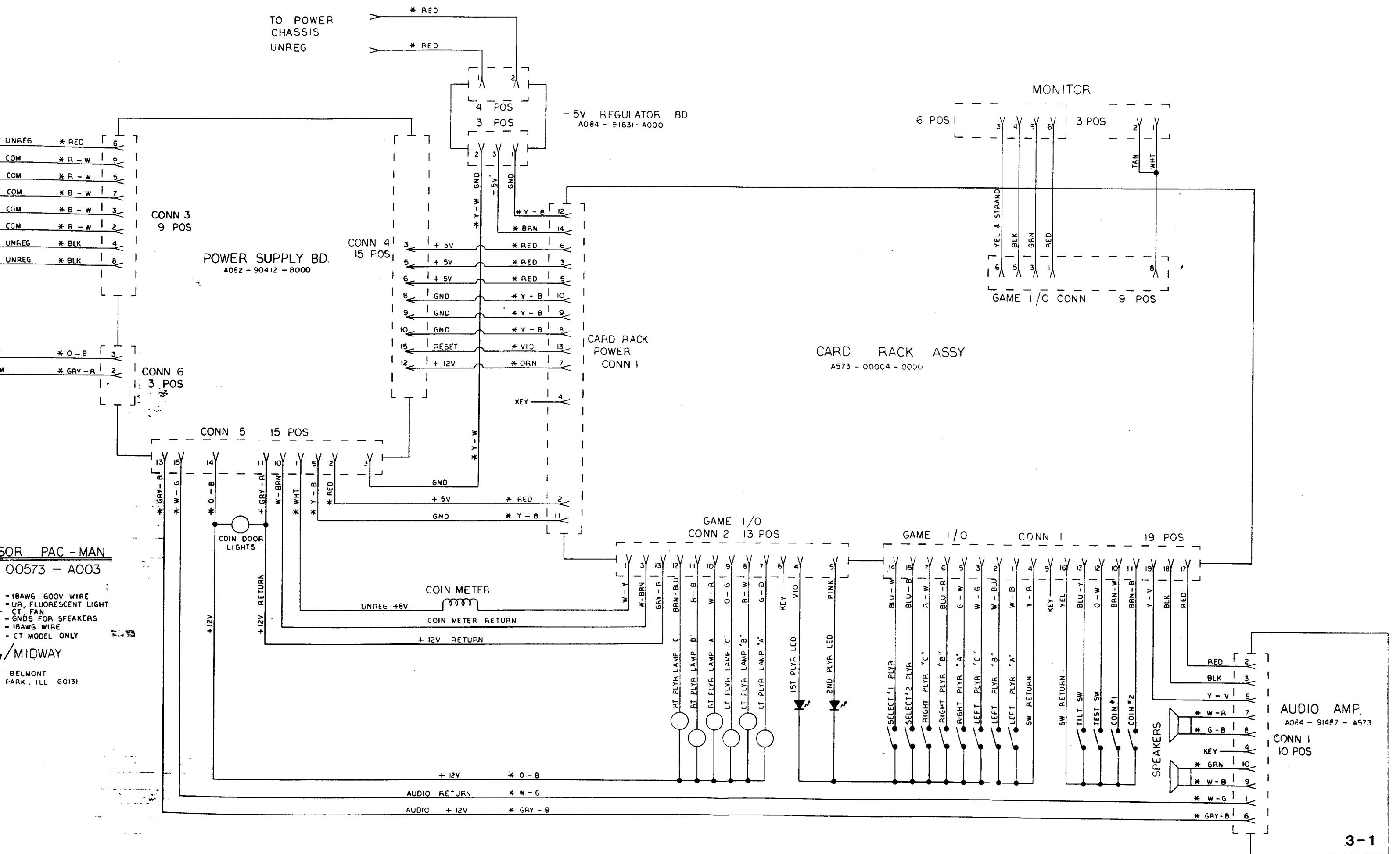
In the **TWO PLAYER GAME**, the players are challenging each other to see who can answer correctly *first*. The player that answers correctly *first* receives the score and that player is indicated by the marquee-like pattern moving on the players blackboard.

If a player answers incorrectly, he loses a Fruit and the other player **MUST** try to answer the question correctly in the time remaining. If the other player *fails to answer or answers incorrectly*, a Fruit is subtracted from him also.

The game ends for the first player to run out of Fruit. The remaining player then continues to play from that point on just as though it were a single player game (that is—the remaining player is permitted two chances to answer each question).

## HIGH SCORE/INITIAL MODE:

Follow the *on-screen instructions* to enter your initials.



DESIGNATION LIST

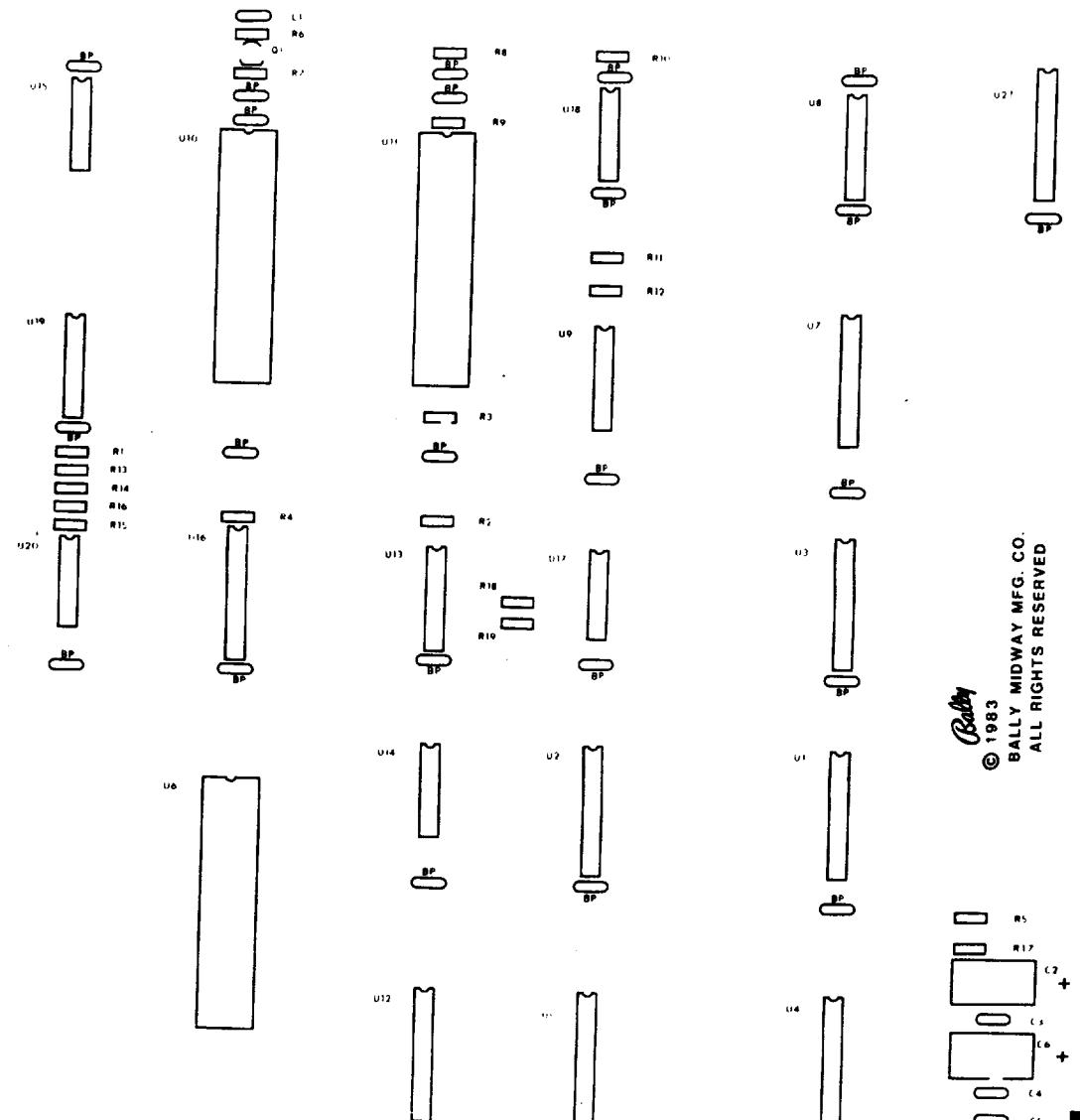
#### CROSS REFERENCE LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
BP	0.1 MFD +80-20% AX. CER.
C1	0.1 MFD +80-20% AX. CER.
C2	15 MFD 20% TANT.
C3-C5	0.1 MFD +80-20% AX. CER.
C6	15 MFD 20% TANT.
R1	2200 OHM 1/4W 5%
R2-R4	1000 OHM 1/4W 5%
R5	10K OHM 1/4W 5%
R6	20K OHM 1/4W 5%
R7	100K OHM 1/4W 5%
R8-R9	75 OHM 1/4W 5%
R10	36 OHM 1/4W 5%
R11-R12	75 OHM 1/4W 5%
R13-R14	11K OHM 1/4W 5%
R15	4300 OHM 1/4W 5%
R16	47K OHM 1/4W 5%
R17	1000 OHM 1/4W 5%
R18-R19	47 OHM 1/4W 5%
Q1	2N6427
U1-U2	74LS244
U3	74LS245
U4-U5	74LS244
U6	2-80
U7	74LS245
U8-U9	74LS257
U10	CUSTOM ADDRESS
U11	CUSTOM DATA
U12	CUSTOM U12
U13	74LS174
U14	74LS30
U15	MC14024BCP
U16	CUSTOM U16
U17	74S74
U18	74F02
U19	MC14574
U20	74S74
U21	74LS374
NON-REFERENCED	
20-PIN IC SOCKET	
40-PIN IC SOCKET	
CARD EJECTORS	
PC BOARD	

NON-REFERENCED  
20-PIN IC SOCKET  
40-PIN IC SOCKET  
CARD EJECTORS  
PC BOARD

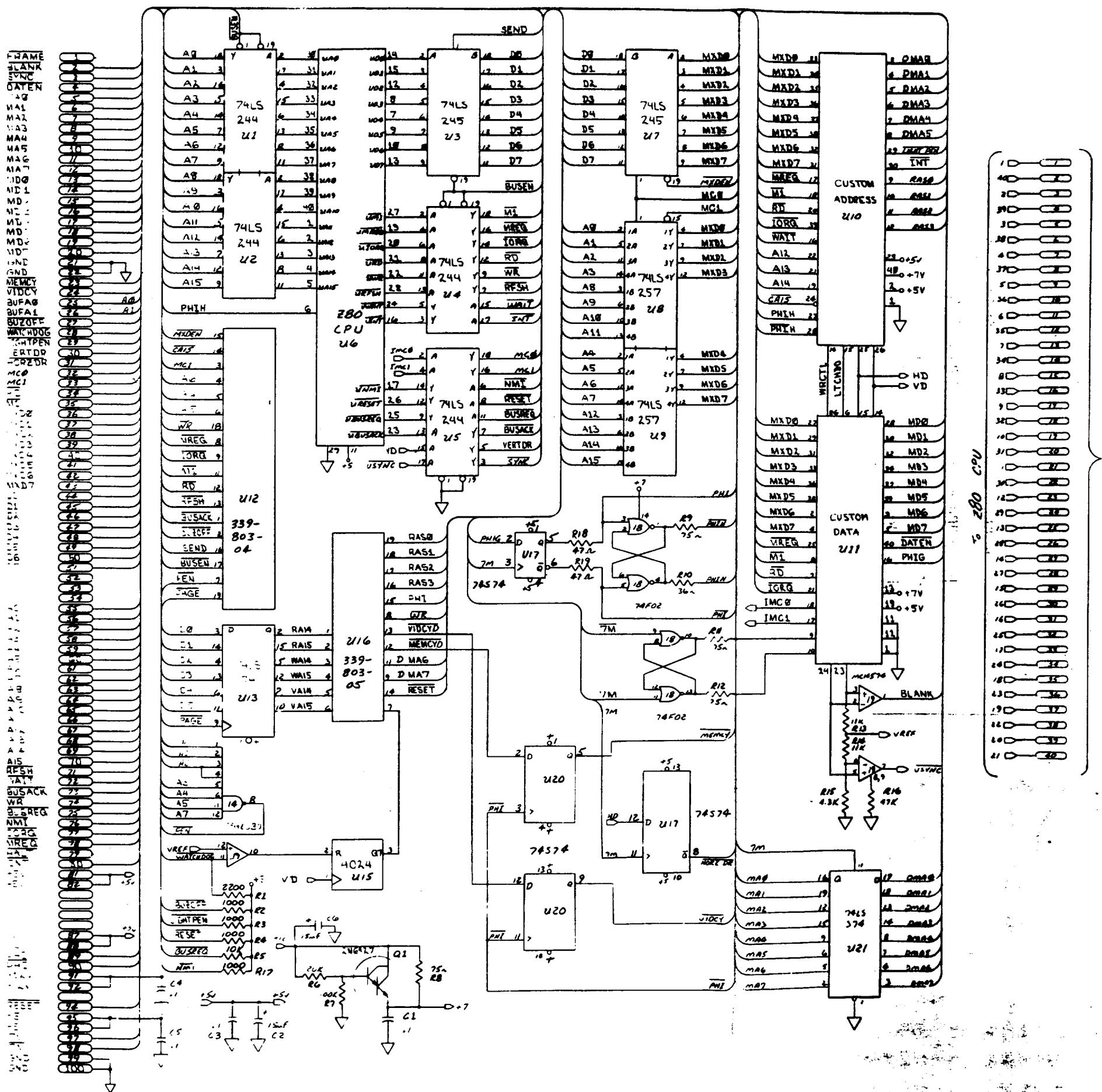
A082-91465-A000

CPU



Bally © 1983

<u>DESCRIPTION</u>	<u>QTY</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
0.1 MFD	27		0339-00800-0001
15 MFD	2	C2, C6	0339-00800-0002
36 OHM	1	R10	0062-07783-1XXX
47 OHM	2	R18, R19	0062-08683-1XXX
75 OHM	4	R8, R9, R11, R12	0062-10183-1XXX
1000 OHM	4	R2-R4	0062-17983-1XXX
2200 OHM	1	R1	0062-19583-1XXX
4300 OHM	1	R15	0062-20983-1XXX
10K OHM	1	R5	0062-22783-1XXX
11K OHM	2	R13, R14	0062-22983-1XXX
20K OHM	1	R6	0062-24183-1XXX
47K OHM	1	R16	0062-25983-1XXX
100K OHM	1	R7	0062-27583-1XXX
2N6427	1	* Q1	0339-00802-0001
74LS30	1	U14	0339-00803-0006
74S74	2	U17, U20	0339-00803-0026
74LS174	1	U13	0339-00803-0007
74LS244	4	U1, U2, U4, U5	0339-00803-0008
74LS245	2	U3, U7	0339-00803-0009
74LS257	2	U8, U9	0339-00803-0010
74F02	1	U18	0339-00803-0011
74LS374	1	U21	0339-00803-0012
MC14024B	1	U15	0339-00803-0013
MC14574	1	U19	0339-00803-0014
Z-80	1	U6	0339-00803-0001
CUSTOM ADDRESS	1	U10	0339-00803-0002
CUSTOM DATA	1	U11	0339-00803-0003
CUSTOM U12	1	U12	0339-00803-0004
CUSTOM U16	1	U16	0339-00803-0005
20-PIN IC SOCKET	9		0339-00804-0005
40-PIN IC SOCKET	3		0339-00804-0009
CARD EJECTORS	2		0339-00804-0010
0.025 GOLD PINS	40		0017-00033-0493
P.C BOARD, BLANK	1		0000-00000-0000



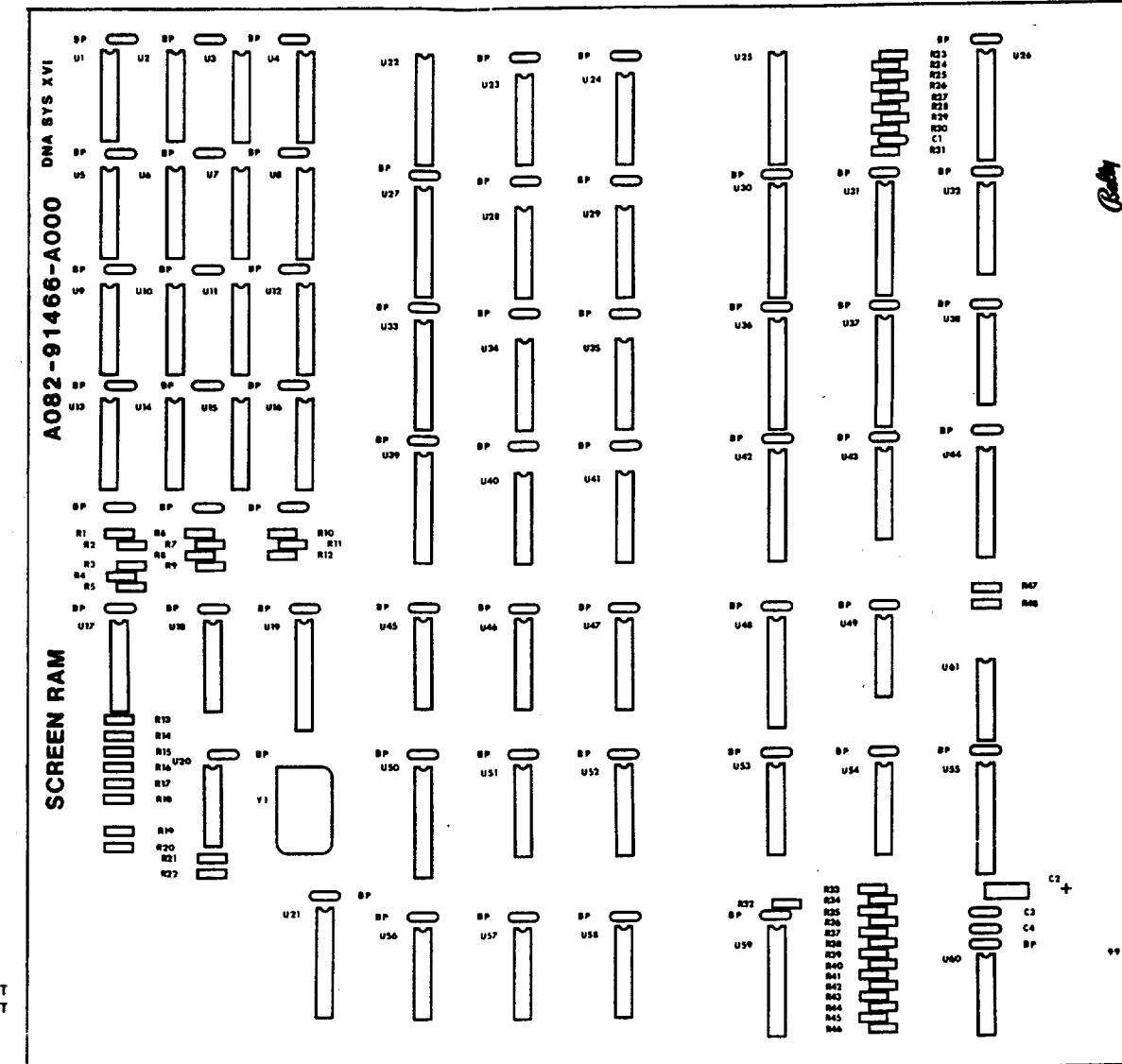
PROJECT EN6		REVISIONS		1	
		USED ON	SYS * VI	MIDWAY MFG. CO.	
		MAP	NO NEED 1 PER	Rely	
		16 COLOR CPU CARD SCHEMATIC DWG		-444-40 M 051 - 00339 - A 002	
		A 082 - 91465 - A 0000			
DATE	7/15/83				
NAME	J. J. Z.				
GRADE	10				
CLASS	10				
LAST	LAST				

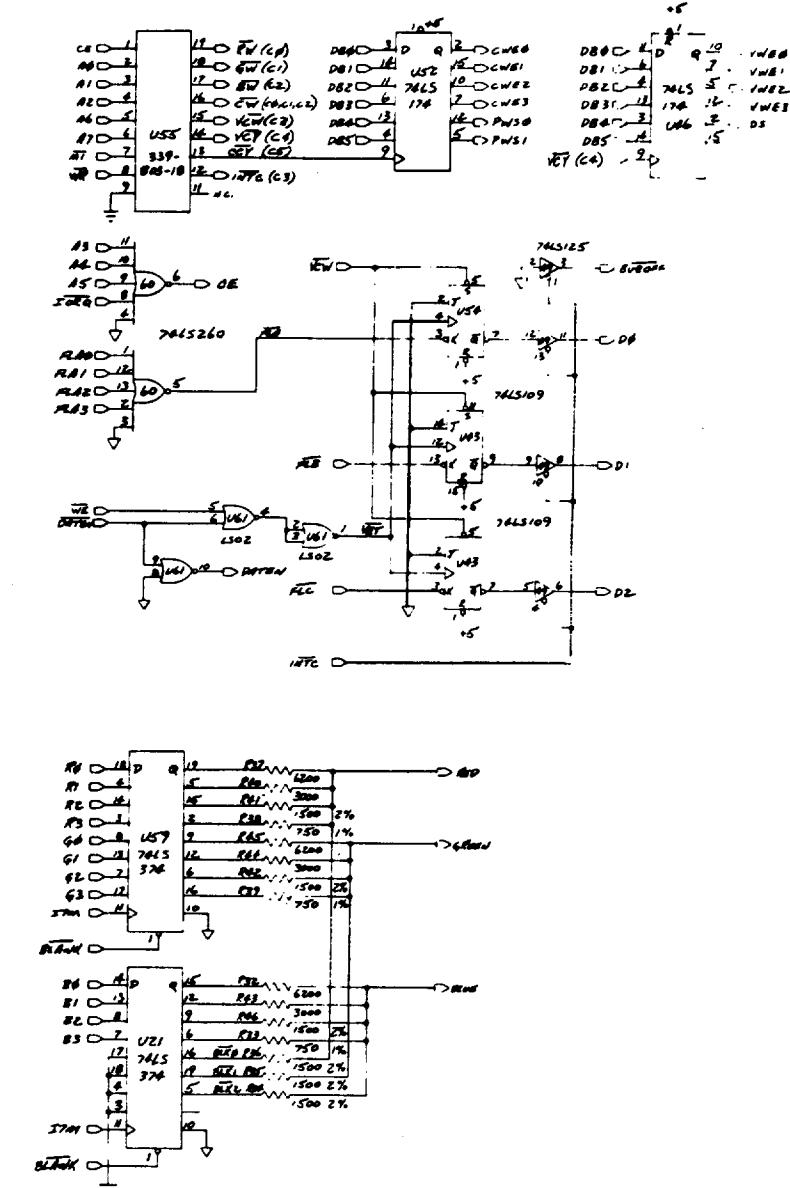
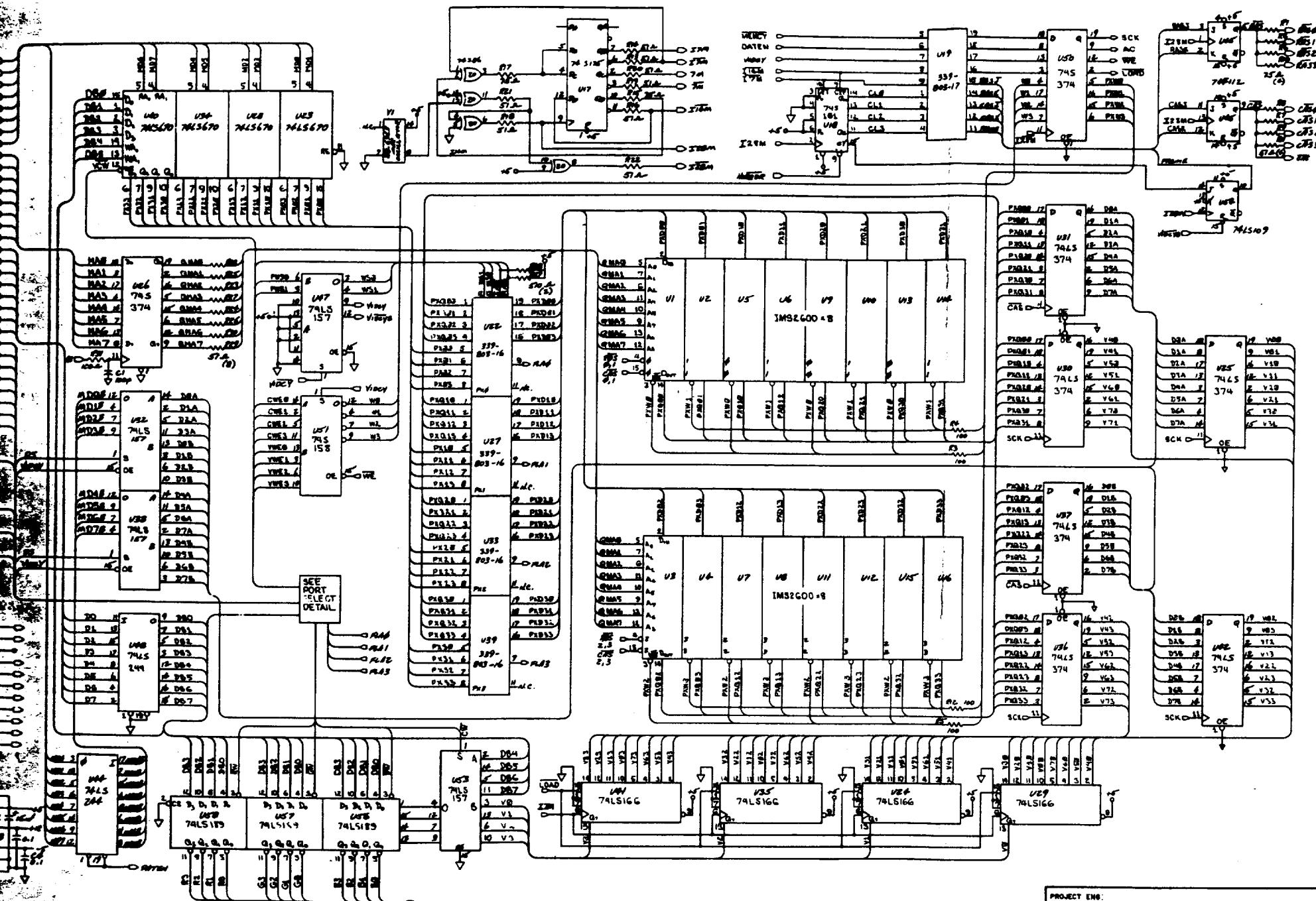
DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
BP	0.1 MFD +80-20%	U1-U16	MID2600
	AX. CER.	U17	74S175
		U18	74S161
C1	100 PFD 5%	U19	CUSTOM U19
	AX. CER.	U20	74S86
C2	15 MFD 20% TANT.	U21	74S374
C3	0.1 MFD +80-20%	U22	CUSTOM U22
	AX. CER.	U23	74L5670
C4	0.1 MFD +80-20%	U24	74L5166
	AX. CER.	U25	74L5374
R1	75 OHM 1/4W 5%	U26	CUSTOM U27
R2	75 OHM 1/4W 5%	U27	74L5374
R3	100 OHM 1/4W 5%	U28	74L5670
R4	100 OHM 1/4W 5%	U29	74L5166
R5	100 OHM 1/4W 5%	U30	74L5374
R6	75 OHM 1/4W 5%	U31	74L5157
R7	51 OHM 1/4W 5%	U32	CUSTOM U33
R8	51 OHM 1/4W 5%	U33	74L5670
R9	51 OHM 1/4W 5%	U34	74L5166
R10	75 OHM 1/4W 5%	U35	74L5374
R11	51 OHM 1/4W 5%	U36	74L5157
R12	100 OHM 1/4W 5%	U37	74L5374
R13	51 OHM 1/4W 5%	U38	CUSTOM U39
R14	51 OHM 1/4W 5%	U39	74L5670
R15	75 OHM 1/4W 5%	U40	74L5166
R16	51 OHM 1/4W 5%	U41	74L5374
R17	75 OHM 1/4W 5%	U42	74L5109
R18-R30	51 OHM 1/4W 5%	U43	74L5244
R31	100 OHM 1/4W 5%	U44	74F112
R32	6200 OHM 1/4W 5%	U45	74LS174
R33	750 OHM 1/4W 1%	U46	74LS157
R34	1500 OHM 1/4W 2%	U47	74LS244
R35	1500 OHM 1/4W 2%	U48	74LS125
R36	1500 OHM 1/4W 2%	U49	74S158
R37	6200 OHM 1/4W 5%	U50	74S161
R38	750 OHM 1/4W 1%	U51	74S175
R39	750 OHM 1/4W 1%	U52	74S374
R40	3000 OHM 1/4W 5%	U53	74F112
R41	1500 OHM 1/4W 2%	U54	CUSTOM U22-27-33-39
R42	1500 OHM 1/4W 2%	U55	CUSTOM U19
R43	3000 OHM 1/4W 5%	U56	CUSTOM U55
R44	3000 OHM 1/4W 5%	U57	MID2600
R45	6200 OHM 1/4W 5%	U58	16-PIN IC SOCKET
R46	1500 OHM 1/4W 2%	U59	20-PIN IC SOCKET
R47	510 OHM 1/4W 5%	U60	CARD EJECTORS
R48	510 OHM 1/4W 5%	U61	28.636360 MHZ

Y1

NON-REFERENCED  
16-PIN IC SOCKET  
20-PIN IC SOCKET  
CARD EJECTORS  
PC BOARD



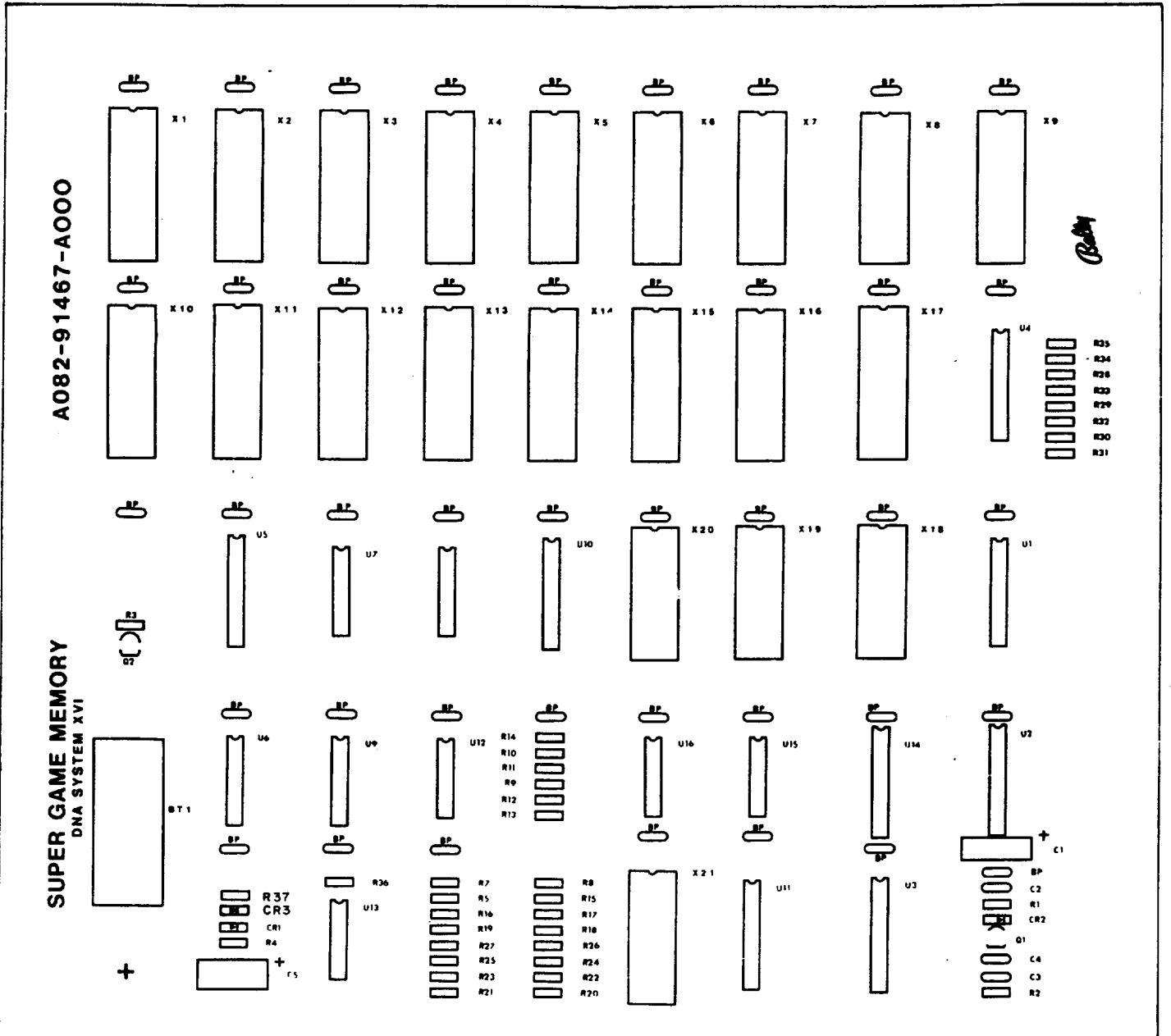


PROJECT ENG:			USED ON SYS XVI		REVISIONS	
DO NOT WRITE ON ME			SCALE	NO RECD	1 PER	
DIM. TOLERANCES UNLESS RECD		DEPT	SCREEN RAM			PART NO
PRINTED 10/10/83		7/15/83	SCHEMATIC DWG A082-91466-A000			M051-00339-A004

**DESIGNATION LIST**

**CROSS REFERENCE LIST**

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
BP	0.1 MFD +80-20% AX. CER.
C1	15 MFD 20% TANT.
C2	0.1 MFD +80-20% AX. CER.
C3	0.1 MFD +80-20% AX. CER.
C4	0.1 MFD +80-20% AX. CER.
C5	15 MFD 20% TANT.
C6	0.1 MFD +80-20% AX. CER.
R1	1000 OHM 1/4W 5%
R2	120 OHM 1/4W 5%
R3	2700 OHM 1/4W 5%
R4	220K OHM 1/4W 5%
R5	10K OHM 1/4W 5%
R6	470K OHM 1/4W 5%
R7-R27	10K OHM 1/4W 5%
R28-R35	110 OHM 1/4W 5%
R36	10K OHM 1/4W 5%
R37	470 OHM 1/4W 5%
BT1	3.6V NICD
CR1	1N4004
CR2	1N4004
CR3	1N4616
Q1	2N4401
Q2	2N4401
U1	74LS244
U2	74LS244
U3	74LS244
U4	74LS245
U5	CUSTOM U5
U6	74LS175
U7	74LS138
U8	74LS138
U9	74LS139
U10	CUSTOM U10
U11	CUSTOM U11
U12	74LS74
U13	7403
U14	74LS245
U15	7417
U16	7417



$$x_1 - x_{17}$$

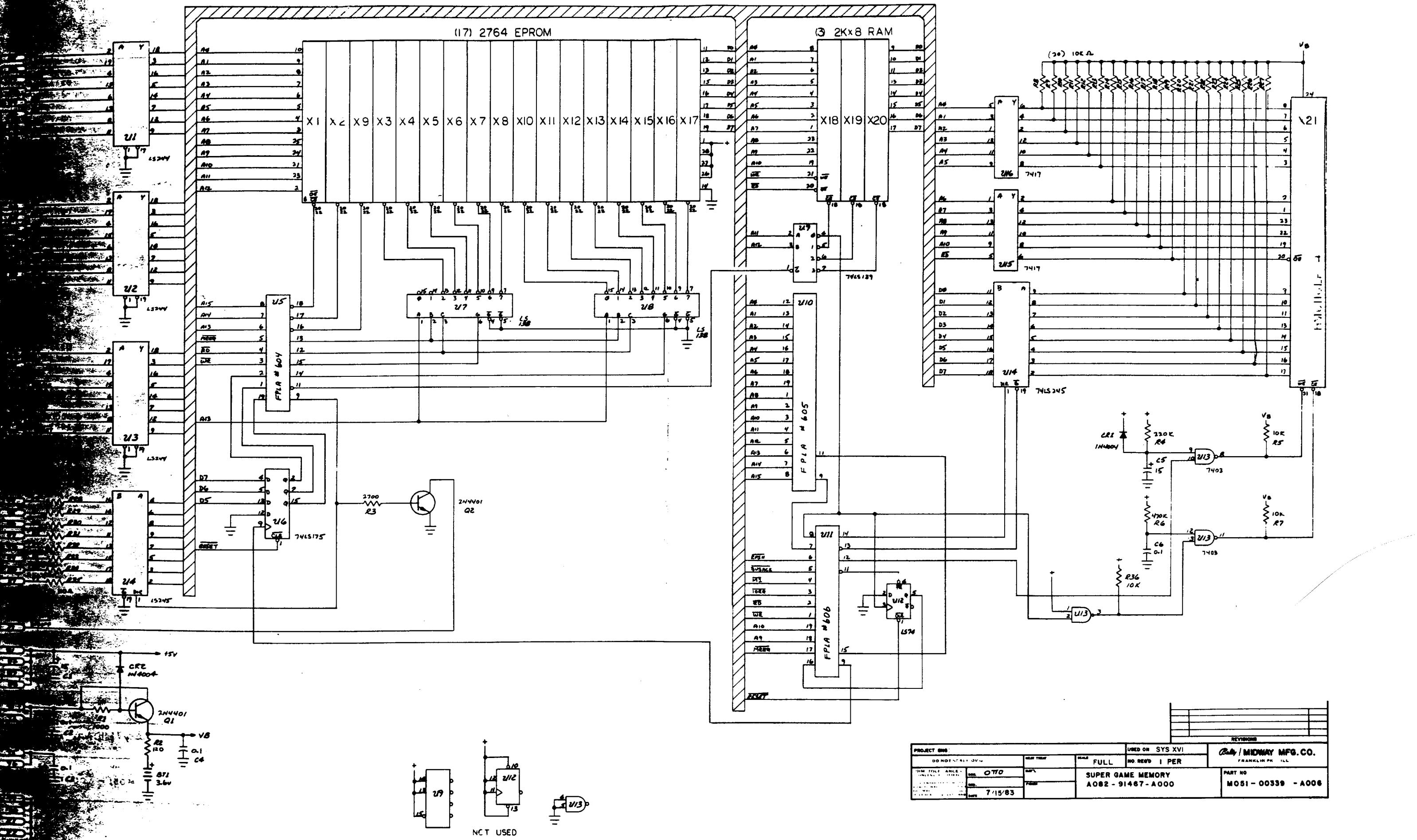
28-PIN IC SOCKET  
24-PIN IC SOCKET

**NON-REFERENCED  
20-PIN IC SOCKET  
CARD EJECTORS  
PC BOARD**

NON-REFERENCED  
USED ON PROFESSOR  
PAC-MAN  
2763 EPROM POS X1  
2763 EPROM POS X2  
2763 EPROM POS X3  
2763 EPROM POS X4  
2763 EPROM POS X5  
2763 EPROM POS X6  
2763 EPROM POS X7  
2763 EPROM POS X8  
2763 EPROM POS X9  
  
2KX8 RAM POS X18  
2KX8 RAM POS X19  
2KX8 RAM POS X20  
2KX8 RAM POS X21

2K X 8 RAM POS X18  
2K X 8 RAM POS X19  
2K X 8 RAM POS X20  
2K X 8 RAM POS X21

PROJECT ENG: D. OTTO			USED ON PROF. PACMAN	REVISIONS	
DO NOT SCALE DWG		MEAT TREAT	SCALE FULL	NO REQ'D 1 PER	Bally / MIDWAY MFG. CO. FRANKLIN PARK ILL
DIM. TOLERANCES UNLESS SPECIFIED		BAS'L FINISH	ASSY. DWG. SUPER GAME MEMORY		PART NO M051 - 00339 - A005
INCHES	MM		CDR.	FINISH	
DATE 7/15/83					



DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
BP	0.1 MFD +80-20% AX. CER.
C1-C14	0.1 MFD +80-20% AX. CER.
C15-C18	15 MFD 20% TANT.
C19-C24	27 PFD 5% AX. CER.
C25-C26	470 PFD 20% AX. CER.
R1-R12	220 OHM 1/4W 5%
R13-R24	2700 OHM 1/4W 5%
R25-R28	270 OHM 1/4W 5%
R29-R30	220 OHM 1/4W 5%
R31-R36	270 OHM 1/4W 5%
R37-R38	100 OHM 1/4W 5%
R39-R40	330 OHM 1/4W 5%
R41-R42	2200 OHM 1/4W 5%
R43-R44	67K OHM 1/4W 5%
R45-R52	2700 OHM 1/4W 5%
R53	22K OHM 1/4W 5%
R54	5100 OHM 1/4W 5%
R55	100 OHM 1/4W 5%
R56-R58	150 OHM 1/4W 5%
R59	11 OHM 1/4W 5%
R60	22 OHM 1/4W 5%
R61	11 OHM 1/4W 5%
R62	22 OHM 1/4W 5%
R63	11 OHM 1/4W 5%
R64	22 OHM 1/4W 5%
R65	2700 OHM 1/4W 5%

CR1-CR2

1N4004

Q1-Q2  
Q3-Q6  
Q7-Q8  
Q9-Q14  
Q15  
Q16  
Q17-Q22

TIP-110  
2N4401  
2N4403  
TIP-31  
2N6427  
2N4401  
2N4403

U1-U4  
U5  
U6-U7  
U8  
U9  
U10-U11

MC14539B  
CUSTOM I/O  
74LS86  
CUSTOM I/O  
74LS86  
7417

L1-L4

FERRITE BEAD

J1  
J2  
J3

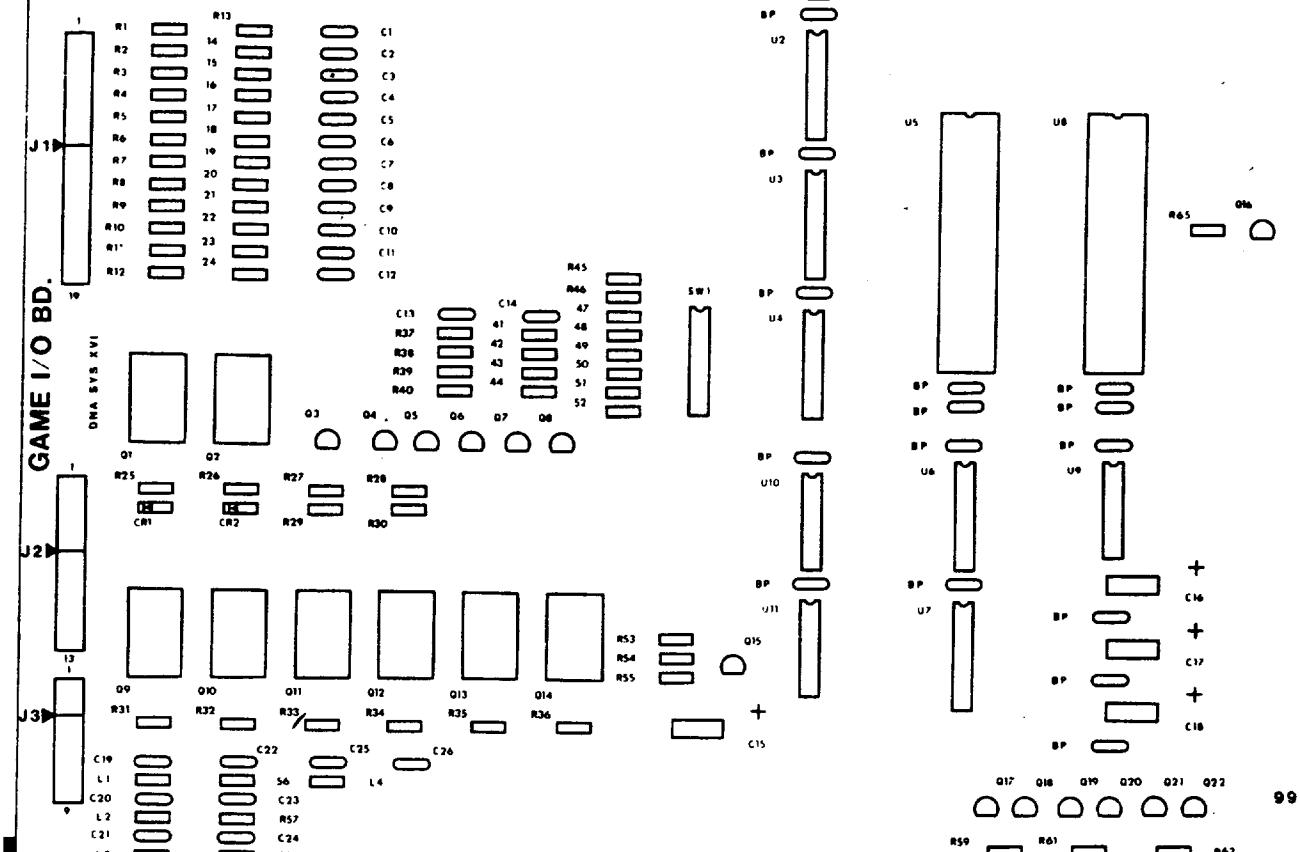
KK100-19RA  
KK100-13RA  
KK100-09RA

SW1

8-POS DIP SWITCH

NON-REFERENCED  
40-PIN IC SOCKET  
CARD EJECTORS  
METAL SNAPS  
PC BOARD

A084-91469-A573

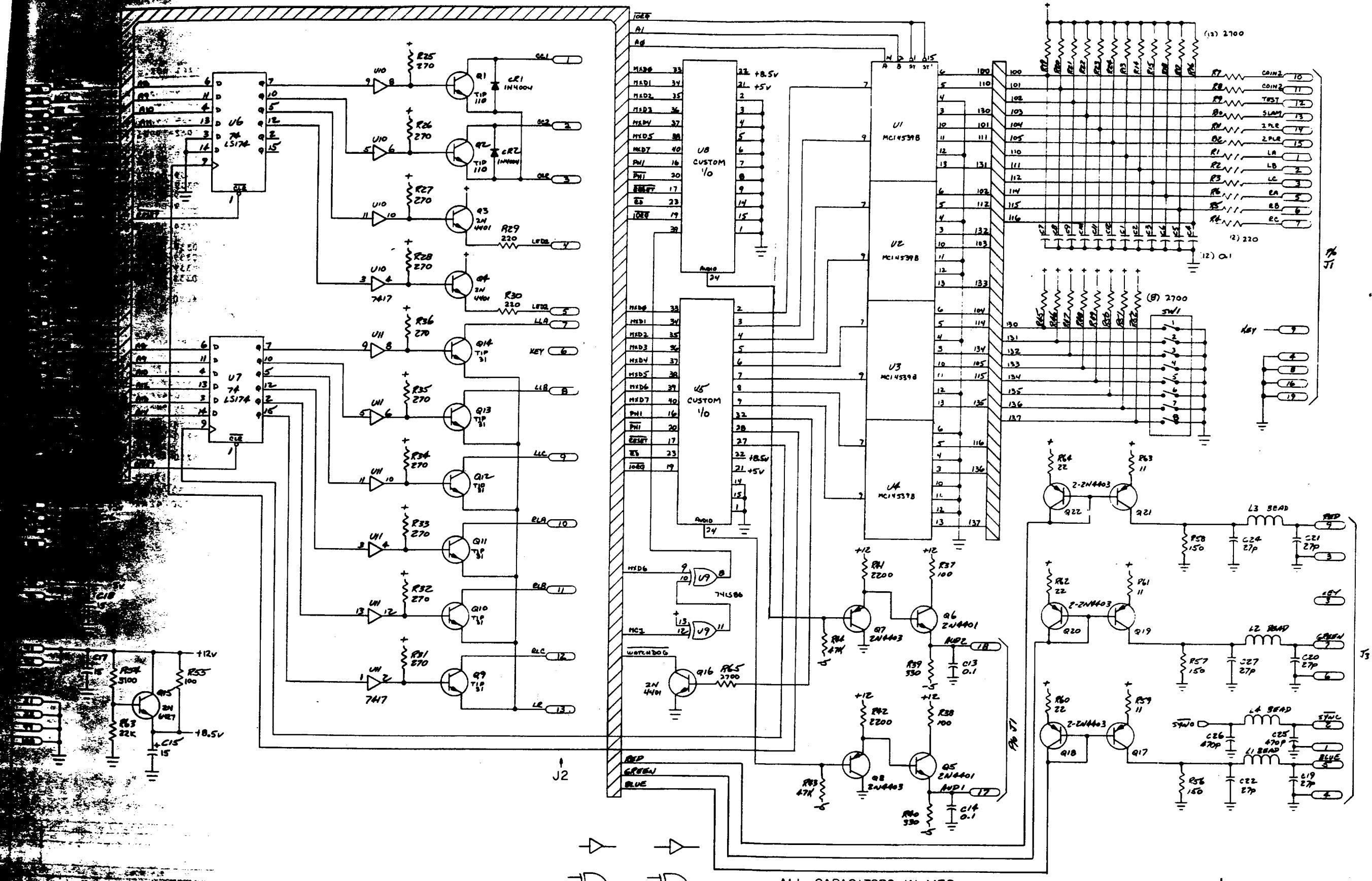


CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
27 PFD	6	C19-C24	0573-00800-0005
470 PFD	2	C25-C26	0573-00800-0006
0.1 MFD	30	C15-C18	0573-00800-0001
15 MFD	4	C15-C18	0573-00800-0002
11 OHM	3	R59, R61, R63	0062-052B3-1XXX
22 OHM	3	R60, R62, R64	0062-063B3-1XXX
100 OHM	3	R37, R38, R55	0062-110B3-1XXX
150 OHM	3	R56-R58	0062-122B3-1XXX
220 OHM	14	R1-R12, R29, R30	0062-133B3-1XXX
270 OHM	10	R25-R28, R31-R36	0062-138B3-1XXX
330 OHM	2	R39, R40	0062-144B3-1XXX
2200 OHM	2	R41, R42	0062-195B3-1XXX
2700 OHM	21	R13-R24, R45-R52	0062-199B3-1XXX
5100 OHM	1	R65	
22K OHM	1	R54	0062-213B3-1XXX
47K OHM	2	R53	0062-243B3-1XXX
1N4004	2	R43, R44	0062-259B3-1XXX
2N4401	5	CR1, CR2	0573-00801-0001
2N4403	8	Q3-Q6, Q16	0573-00802-0001
2N6427	1	Q7-Q8, Q17-Q22	0573-00802-0002
TIP-31	1	Q15	0573-00802-0003
TIP-110	6	Q9-Q14	0573-00802-0004
	2	Q1, Q2	0573-00802-0005
7417	2	U10, U11	0573-00803-0005
74LS86	1	U9	0573-00803-0002
74LS174	2	U6, U7	0573-00803-0003
MC14539B	4	U1-U4	0573-00803-0004
CUSTOM I/O	2	U5, U8	0573-00803-0001

8-POS DIP SW. FERRITE BEAD	1	SW1	0339-00804-0011
	4	L1-L4	0069-275XX-XCGX
KK100-09RA	1	J3	3000-16468-0900
KK100-13RA	1	J2	3000-16468-1300
KK100-19RA	1	J1	3000-16468-1900
40-PIN IC SOCKET	2		0339-00804-0009
METAL SNAPS	8		0573-00804-0001
CARD EJECTORS	2		0573-00804-0010
PC. BOARD, BLANK	1		A080-91469-A573

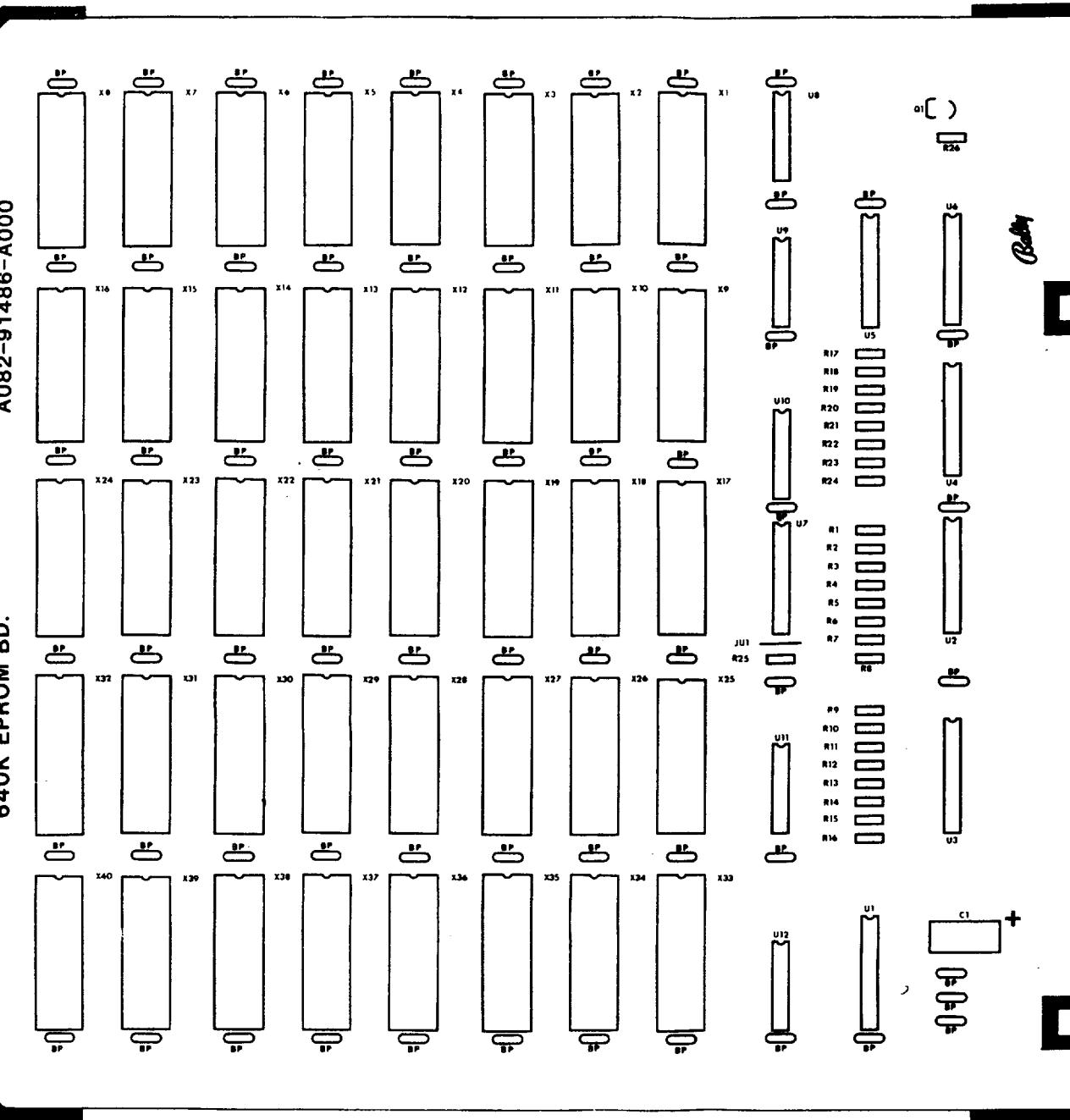
PROJECT ENG: D. OTTO		USED ON PROF. PACMAN	REVISIONS		
DO NOT SCALE DWG		MEAT TREAT <input checked="" type="checkbox"/>	SCALE <input checked="" type="checkbox"/> FULL	NO. REQ'D 1 PER	
DIM. TOLERANCES UNLESS SPECIFIED		BAK	ASSY. DWG. I/O BD.	Beta / MIDWAY MFG. CO. FRANKLIN PK. ILL	
FRACTIONAL DECIMAL HOLE DIA		INCHES <input checked="" type="checkbox"/>	INCHES <input checked="" type="checkbox"/>	PART NO.	
+ .002 .000		DATE 7/5/83	DATE <input checked="" type="checkbox"/>	M051 - 00573 - A008	



**DESIGNATION LIST**

A082-91486-A000

640K EPROM BD.



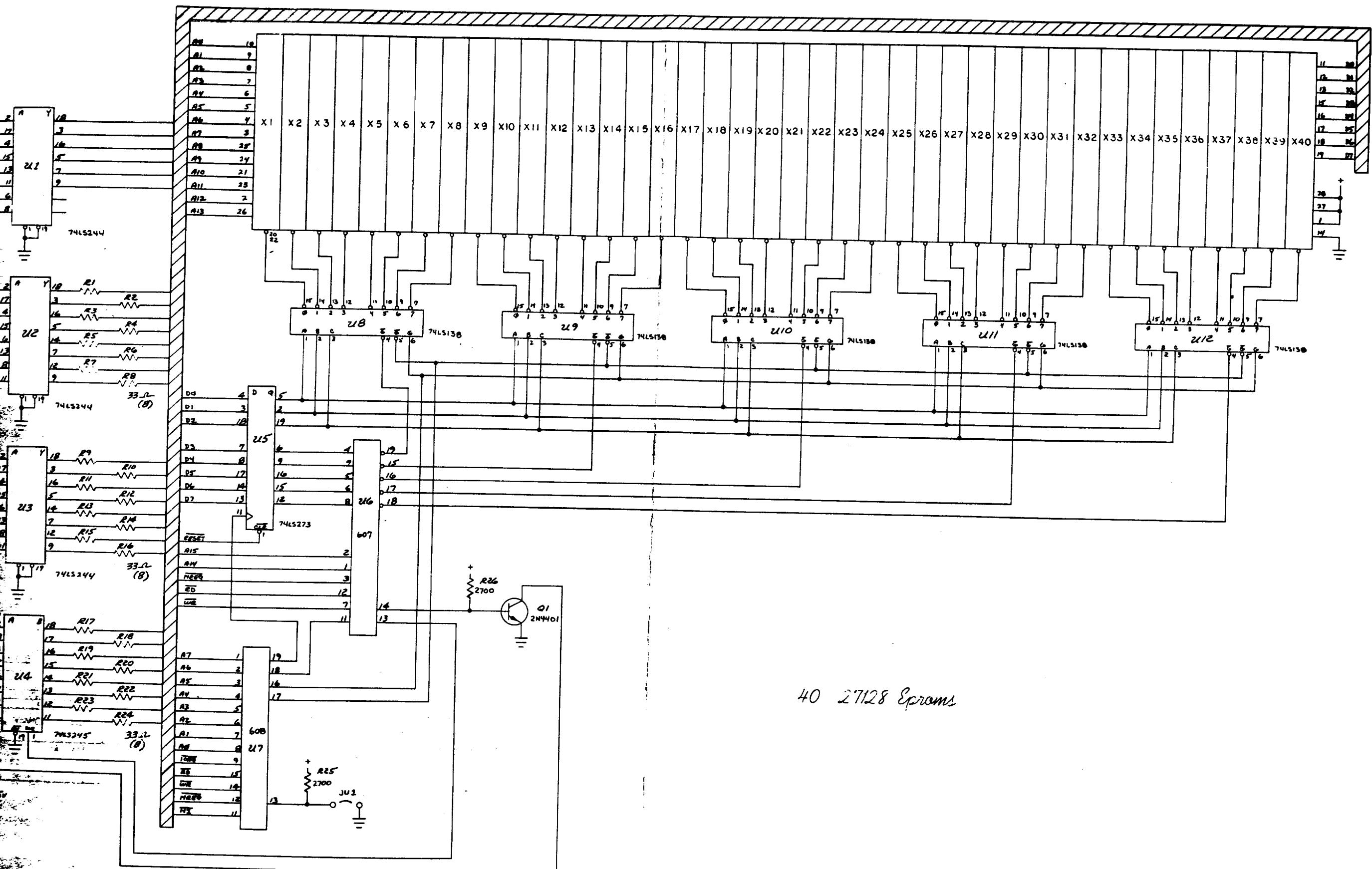
**CROSS REFERENCE LIST**

<u>DESCRIPTION</u>	<u>QTY</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
0.1 MFD	63		0339-00800-0017
15 MFD	1	C1	0339-00800-0018
33 OHM	24	R1-R24	0062-074B3-1XXX
2700 OHM	2	R25,R26	0062-199B3-1XXX
2N4401	1	Q1	0339-00802-0005
74LS138	5	U8-U12	0339-00803-0031
74LS244	3	U1-U3	0339-00803-0082
74LS245	1	U4	0339-00803-0083
74LS273	1	U5	0339-00803-0084
CUSTOM U6	1	U6	0339-00803-0085
CUSTOM U7	1	U7	0339-00803-0086
20-PIN	7		0339-00804-0005
28-PIN IC SOCKET	40	X1-X40	0339-00804-0008
	1	JU1	0339-00804-0016
CARD EJECTORS	2		0339-00804-0010
P.C. BOARD, BLANK	1		A080-91486-A000

**DESCRIPTION**

PROG 27128	1	5730-42AXC-AXFD
PROG 27128	1	5730-42AXC-BXFD
PROG 27128	1	5730-42AXC-CXFD
PROG 27128	1	5730-42AXC-DXFD
PROG 27128	1	5730-42AXC-EXFD
PROG 27128	1	5730-42AXC-FXFD
PROG 27128	1	5730-42AXC-GXFD
PROG 27128	1	5730-42AXC-HXFD
PROG 27128	1	5730-42AXC-JXFD
PROG 27128	1	5730-42AXC-KXFD
PROG 27128	1	5730-42AXC-LXFD
PROG 27128	1	5730-42AXC-MXFD
PROG 27128	1	5730-42AXC-NXFD
PROG 27128	1	5730-42AXC-PXFD

PROJECT ENG: D. OTTO			USED ON PROF. PAC-MAN		REVISIONS	
DO NOT SCALE DOWN		WEAT TREAT	SCALE	FULL	NO. REQ'D	1 PER
DIM. TOLERANCES UNLESS SPECIFIED		DRW.	REFL.	ASSEMBLY DWG. 640K EPROM BD. A082-91486-A000		
DATE		7/11/83	FINISH	PART NO M051 - 00114 - A024		

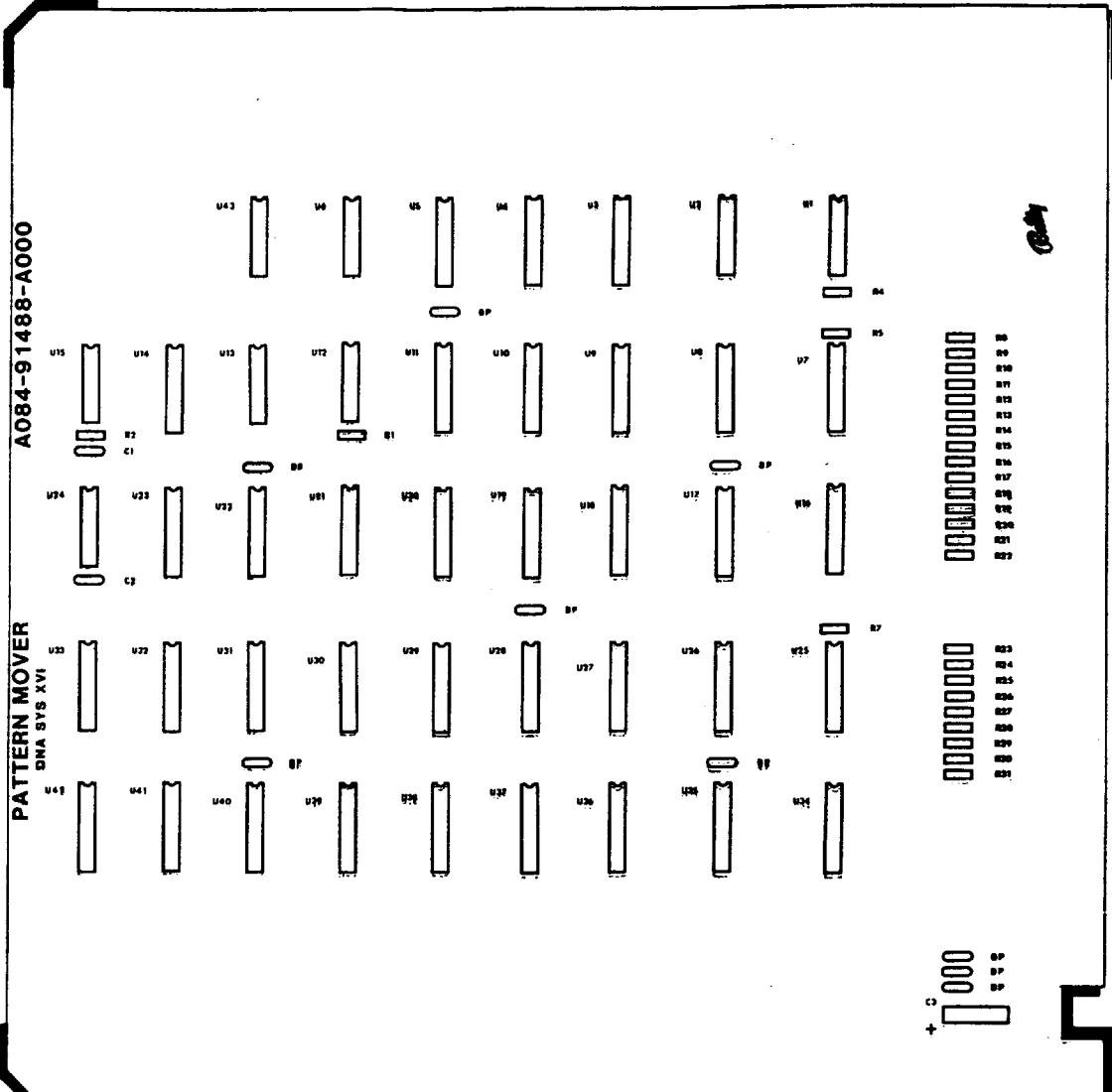


PROJECT ENG		USED ON		REV/RS	
DO NOT EXC. THIS		SYS. XVI			
IM. UNLIMITE		NO RECD 1 PER		MIDWAY MFG. CO.	
DRAFTED BY		74LS273		FRANKLIN, ILL.	
REV. 00		640 K EPROM BOARD			
DATE 07-16-02		SCHEMATIC DWG		M 051-00114-A025	

DESIGNATION LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>	<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
BP	0.1 MFD +80-20%	U1	MC14068
	AX. CER.	U2	MC14068
		U3	MC14572UB
C1	33 PFD 5% AX. CER.	U4	MC14555
C2	1000 PFD 10%	U5	74LS161
	AX. CER.	U6	74LS04
C3	15 MFD 20% TANT.	U7	MC14516
R1	10K OHM 1/4W 5%	U8	74LS257
R2	10K OHM 1/4W 5%	U9	MC14516
R3	NOT USED	U10	74LS175
R4	10K OHM 1/4W 5%	U11	74LS367
R5	6200 OHM 1/4W 5%	U12	74LS00
R6	NOT USED	U13	74LS74
R7	2700 OHM 1/4W 5%	U14	MC14572UB
R8	100 OHM 1/4W 5%	U15	MC14013
R9	6200 OHM 1/4W 5%	U16	MC14516
R10	100 OHM 1/4W 5%	U17	74LS257
R11	6200 OHM 1/4W 5%	U18	MC14516
R12	100 OHM 1/4W 5%	U19	74LS175
R13	6200 OHM 1/4W 5%	U20	74LS367
R14	100 OHM 1/4W 5%	U21	MC14174
R15	6200 OHM 1/4W 5%	U22	74LS157
R16	100 OHM 1/4W 5%	U23	MC14539
R17	6200 OHM 1/4W 5%	U24	MC14081
R18	100 OHM 1/4W 5%	U25	MC14516
R19	6200 OHM 1/4W 5%	U26	74LS257
R20	100 OHM 1/4W 5%	U27	MC14516
R21	6200 OHM 1/4W 5%	U28	MC14175
R22	100 OHM 1/4W 5%	U29	MC14008
R23	10K OHM 1/4W 5%	U30	MC14175
R24	10K OHM 1/4W 5%	U31	MC14516
R25	10K OHM 1/4W 5%	U32	MC14175
R26	10K OHM 1/4W 5%	U33	MC14516
R27	10K OHM 1/4W 5%	U34	MC14516
R28	10K OHM 1/4W 5%	U35	74LS257
R29	10K OHM 1/4W 5%	U36	MC14516
R30	10K OHM 1/4W 5%	U37	MC14175
R31	10K OHM 1/4W 5%	U38	MC14008
		U39	MC14175
		U40	MC14516
		U41	MC14175
		U42	MC14516
		U43	74LS04

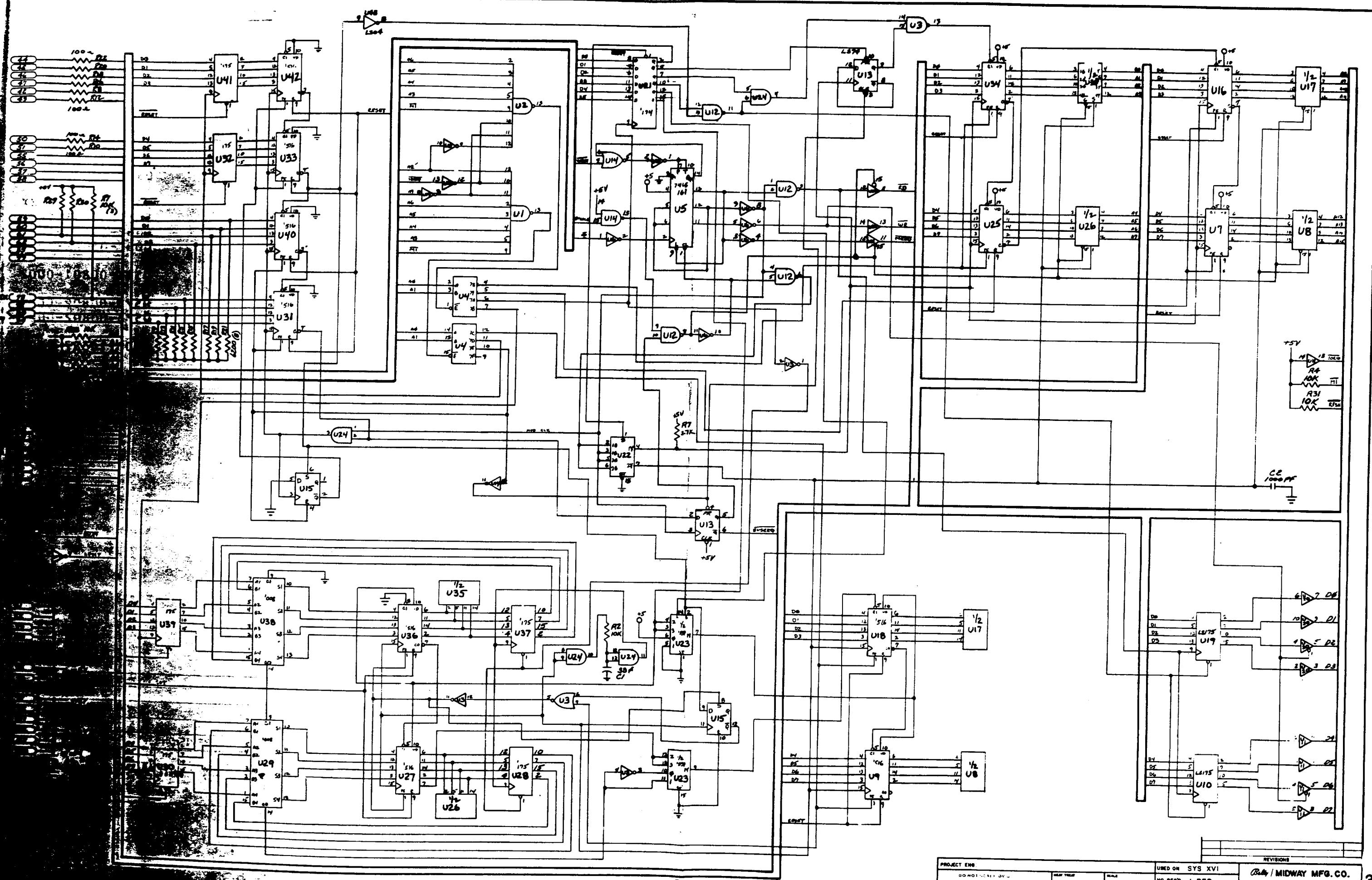
NON-REFERENCED  
CARD EJECTORS  
PC BOARD



CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY</u>	<u>DESIGNATION NO.</u>	<u>PART NO.</u>
33 PFD	1	C1	0339-00800-0011
1000 PFD	1	C2	0339-00800-0012
0.1 MFD	9	C3	0339-00800-0013
15 MFD	1		0339-00800-0014
100 OHM	8	R8,R10,R12,R14, R16,R18,R20,R22	0062-11083-1XXX
2700 OHM	1	R7	0062-199B3-1XXX
6200 OHM	8	R5,R9,R11,R13, R15,R17,R19,R21	0062-217B3-1XXX
10K OHM	12	R1,R2,R4,R23- R31	0062-227B3-1XXX
74LS00	1	U12	0339-00803-0064
74LS04	2	U6,U43	0339-00803-0065
74LS74	1	U13	0339-00803-0066
74LS157	1	U22	0339-00803-0067
74LS161	1	U5	0339-00803-0068
74LS175	2	U10,U19	0339-00803-0069
74LS257	4	U8,U17,U26,U35	0339-00803-0070
74LS367	2	U11,U20	0339-00803-0071
MC14008B	2	U29,U38	0339-00803-0072
MC14013B	1	U15	0339-00803-0073
MC14068B	2	U1,U2	0339-00803-0074
MC14081B	1	U24	0339-00803-0075
MC14174B	1	U21	0339-00803-0076
MC14175B	6	U28,U30,U32,U37, U39,U41	0339-00803-0077
MC14516B	12	U7,U9,U16,U18 U25,U27,U31,U33, U34,U36,U40,U42	0339-00803-0078
MC14539B	1	U23	0339-00803-0079
MC14555B	1	U6	0339-00803-0080
MC14572UB	2	U3,U14	0339-00803-0081
CARD EJECTORS	2		0339-00804-0010
PC. BOARD, BLANK	1		A080-91488-A000

REVISIONS			
/ MIDWAY MFG. CO. FRANKLIN PK. ILL			
PROJECT E&E: D. OTTO	USED ON PROF. PAC-MAN	/ MIDWAY MFG. CO. FRANKLIN PK. ILL	
DO NOT SCALE DWG.	REF. DATE	SCALE	NO. REQ'D 1 PER
DIM. TOLERANCES UNLESS SPECIFIED	7/5/83	FULL	
INCHES/INCHES DECIMALS/DECIMALS MILLIMETERS/MILLIMETERS	7/5/83		ASSEMBLY DWG. PATTERN MOVER P.C. BD. A084-91488-A000
			PART NO. M 051 - 00339 - A009



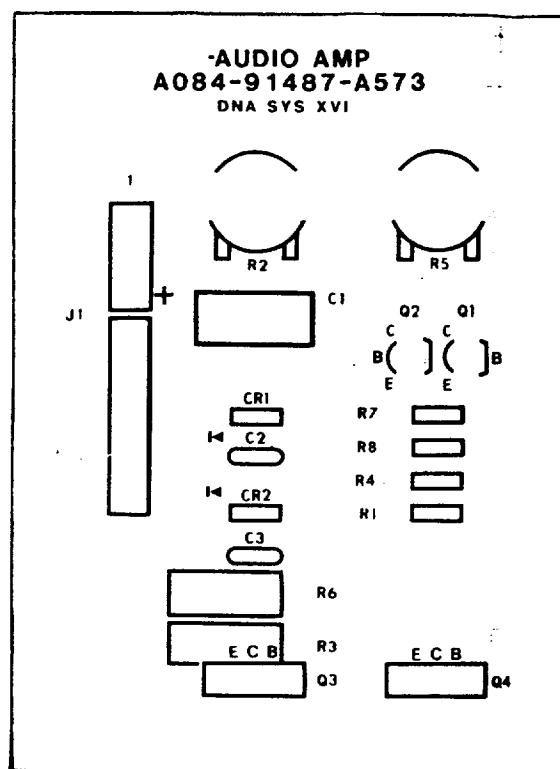
DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
C1	15 MFD 20% TANT.
C2	0.1 MFD +80-20%
AX.	CER.
C3	0.1 MFD +80-20%
AX.	CER.
R1	330 OHM 1/4W 5%
R2	200 OHM
	POTENTIOMETER
R3	3.3 OHM 1W 5%
R4	330 OHM 1/4W 5%
R5	200 OHM
	POTENTIOMETER
R6	3.3 OHM 1W 5%
R7	33 OHM 1/4W 5%
R8	33 OHM 1/4W 5%
CR1	1N4004
CR2	1N4004

Q1 2N4403  
 Q2 2N4403  
 Q3 TIP-31  
 Q4 TIP-31

J1 KK156-10RA

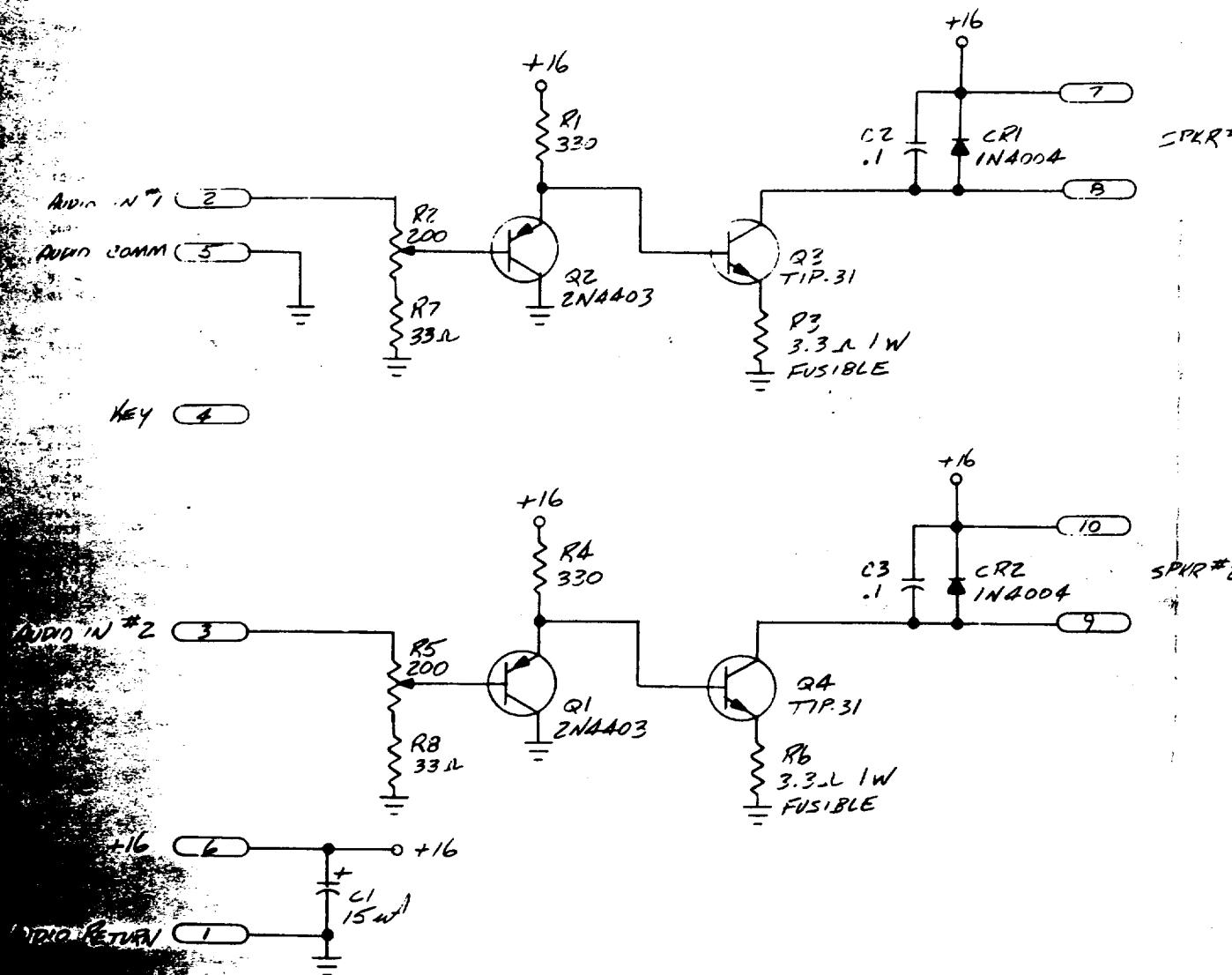
NON-REFERENCED  
 PC BOARD

CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
0.1 MFD	2	C2, C3	0573-00800-0003
15 MFD	1	C1	0573-00800-0004
3.3 OHM 1W	2	R3, R6	0062-038F3-1XXX
33 OHM	2	R7, R8	0062-074B3-1XXX
330 OHM	2	R1, R4	0062-144B3-1XXX
200 OHM	2	R2, R5	0062-050AX-1JED
1N4004	2	CR1, CR2	0573-00801-0002
2N4403	2	Q1, Q2	0573-00802-0006
TIP-31	2	Q3, Q4	0573-00802-0007
KK156-10RA	1	J1	3000-16387-1000
P.C BOARD, BLANK	1		A080-91487-A573

REVISIONS	

PROJECT ENG: DAVE OTTO			USED ON PROF. PACMAN	Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL
DO NOT SCALE DWG.		HEAT TREAT	SCALE FULL	NO. REQ'D 1 PER
DIM. TOLERANCE UNLESS SPECIFIED		DRW	MAT'L	ASSY. DWG. AUDIO AMP
ORIGINAL	0.04	CKD.	FINISH	PART NO M051 - 00573 - A010
INCHES	0.005	DATE	7/15/83	
A084 - 91487 - A573				



DO NOT SCALE DWG.		HEAT TREAT	SCALE 2:1	NO REQ'D 1 PER	USED ON SYS XVI		REVISIONS
DIM. TOLERANCES UNLESS SPECIFIED					DRN <i>RCA</i>	NET	
CONCENTRICITY TIR 0.003 RADIAL TIR 0.003 DECIMAL 0.003 HOLE DIA + 0.002 - 0.003		CKD	FINISH		AUDIO AMP SCHEMATIC DWG A084-91487-A573		PART NO M051-00573-A011
DATE 7/15/83							

## DESIGNATION LIST

DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION
C101	4700uF AX. ELECT.	R117	560ohm 1/4W 5%
C102	470uF AX. ELECT.	R118	150ohm 2W
C103	.1uF AX. CER.	R201	270ohm 1/4W 5%
C104	.1uF AX. CER.	R202	1.2K 1/4W 5%
C105	47pF AX. CER.	R203	1.1M 1/4W 5%
C106	470uF AX. ELECT.	R204	3.3M 1/4W 5%
C107	100uF RD. TANT.	R205	10M 1/4W 5%
C108	.1uF RD. TANT.	R206	100K 1/4W 5%
C109	4.7uF RD. TANT.	R207	33M 1/4W 5%
C110	.1uF AX. CER.	R208	2M 1/4W 5%
C111	.1uF AX. CER.	R209	1M 1/4W 5%
C201	.01uF MYLAR	R210	1.2M 1/4W 5%
C202	.033uF MYLAR	R211	75K 1/4W 5%
C203	.01uF MYLAR	R212	75K 1/4W 5%
C204	.047uF MYLAR	R213	220K 1/4W 5%
C205	820pF AX. CER.	R214	3.9K 1/4W 5%
C206	.01uF AX. CER.	R215	1.2K 1/4W 5%
C207	0.082uF MYLAR	R216	82ohm 1W 10%
		R217	270ohm 1/4W 5%
		R218	110K 1/4W 5%
		R219	68ohm 1/2W 5%

VR101,102 100ohm POT

CP1 .1uF AX. CER.

R101 .18ohm 5W W/RES. SPACER

R102 68ohm 1/2W 5%

R104 100ohm 5W W/RES. SPACER

R105 27ohm 1/4W 5%

R106 270ohm 1/4W 5%

R107 6.2K 1/4W 5%

D101 A15F

D102 A15F

D103 A15F

D104 A15F

D105 A15F

D106 1N4001

D201 1N4148

D202 1N4148

D203 1N4148

D204 1N4001

D205 1N4001

R109 1K 1/4W 5%

R110 .16ohm 15W W/RES. SPACER

R111 6.8ohm 1/2W 5%

R112 68ohm 1/2W 5%

R113 1.2K 1/4W 5%

R114 47ohm 1/4W 5%

R115 160ohm 1/4W 5%

Q102 2N2905

Q105 2N2905

Q201 2N4401

U1 LM305 REG

U2 LM305 REG

U3 LM3900

U4 1N28

U6 555

L101 22uH INDUCTOR

B101 BATTERY 3.6VDC 60DEG-C

F1 3.8A S-BLO FUSE

FC1A,1B FUSE CLIP

FE1,2 FERRITE BEAD

TW1 TIE WRAP

J3 9PIN P.C. MOUNT CONN(MALE)

J4 15PIN P.C. MOUNT CONN(FEMALE)

J5 15PIN P.C. MOUNT CONN(MALE)

J6 3PIN P.C. MOUNT CONN(MALE)

LB1 FUSE TAG

LB2 SYSTEM TAG

HSA1 HEAT SINK ASS'Y 1

MHH6A1 MOUNTING HARD WARE(HEAT SINK)

2 SCREW

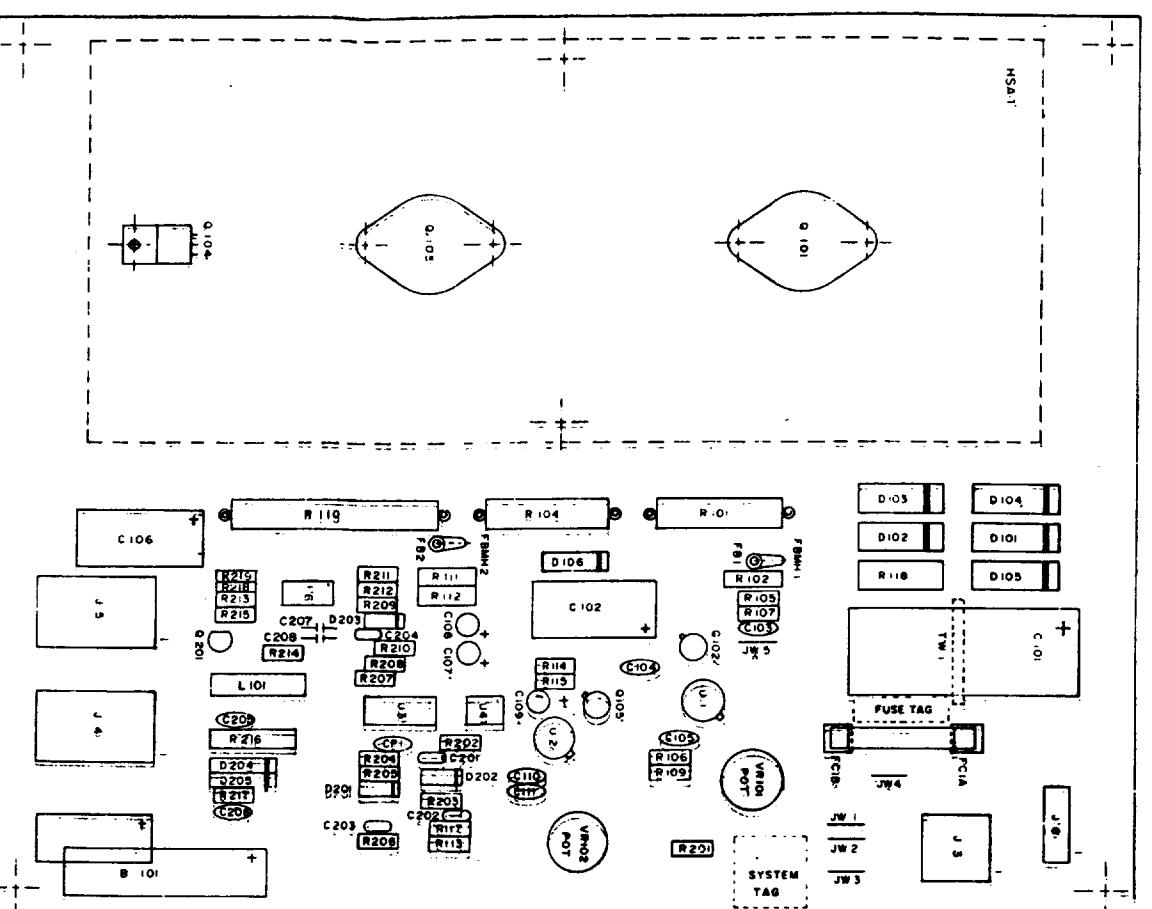
4 WASHER

2 HEXNUT

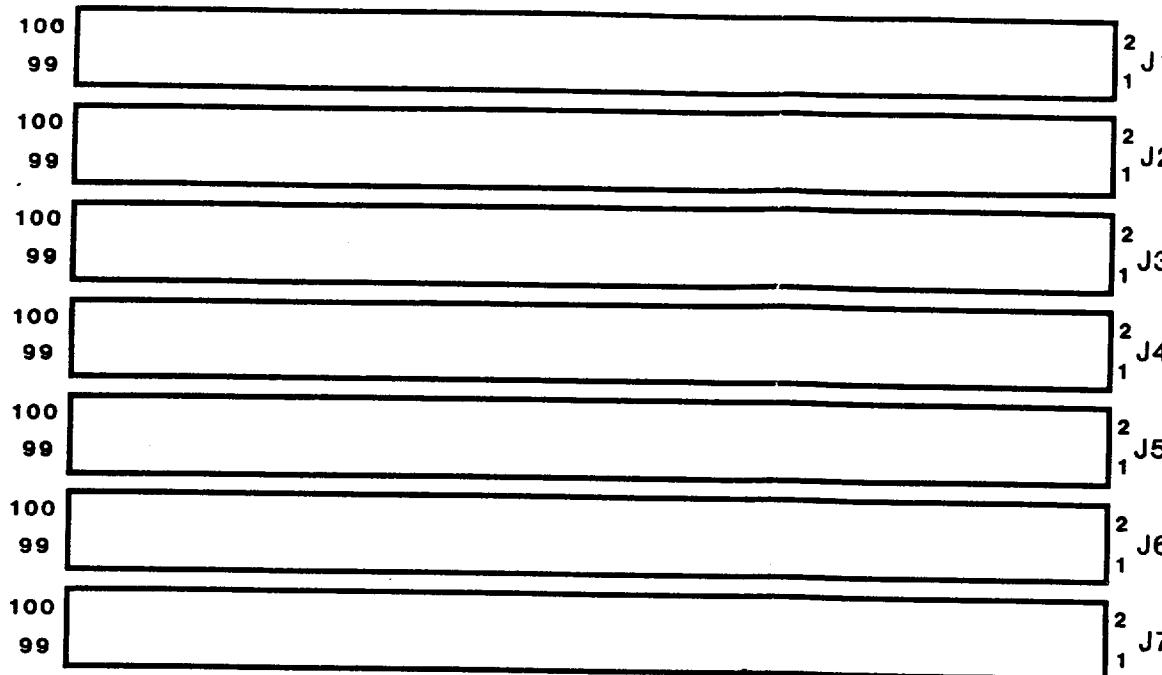
JW1,5 JUMPER WIRE

FBMH1,2 FERRITE BEAD MOUNTING HARDWARE

PROJ. ENG: L. DEKKER		MIDWAY MFG. CO. FRANKLIN, PA. U.S.A.	
DO NOT SCALE DRAWING		FULL NO HEAD THER.	
5/14/82		ASSEMBLY DRAWING 125VA PWRSPY	
		A082-90412-0000	
		M051-00945-B006	



DESCRIPTION	Q'ty	DESIGNATION	PART #
47pF AX. CER.	1	C105	0945-00811-0100
820pF AX. CER.	1	C205	0945-00816-0400
.01uF AX. CER.	2	C206,208	0945-00816-0100
.01uF MYLAR	2	C201,203	0945-00816-0500
.033uF MYLAR	1	C202	0945-00816-0300
.047uF MYLAR	1	C204	0945-00816-1900
0.082uF MYLAR	1	C207	0945-00816-0200
.1uF AX. CER.	5	C103,104,110,111, CP1	0945-00811-0200
.1uF RAD. TANT.	1	C108	0945-00811-0300
4.7uF RAD. TANT.	1	C109	0945-00811-0400
100uF RAD. TANT.	1	C107	0945-00811-0500
470uF AX. ELECT.	2	C102,106	0945-00816-0600
470uF AX. ELECT.	1	C101	0945-00811-0700
160ohm 15W 5%	1	R110	0945-00815-0100
180ohm 5W 5%	1	R101	0945-00815-0200
0.80hm 1/2W 5%	1	R111	0062-04703-1XXX
100hm 5W 5%	1	R104	0945-00812-0100
270hm 1/4W 5%	1	R105	0062-068B3-1XXX
470hm 1/4W 5%	1	R114	0062-086B3-1XXX
680hm 1/2W 5%	3	R102,112,219	0062-098D3-1XXX
820hm 1W 10%	1	R216	0062-104F5-1XXX
150ohm 2W 5%	1	R118	0945-00812-0200
160ohm 1/4W 5%	1	R115	0062-124B3-1XXX
270ohm 1/4W 5%	3	R106,201,217	0062-138B3-1XXX
560hm 1/4W 5%	1	R117	0062-162B3-1XXX
1K 1/4W 5%	1	R109	0062-179B3-1XXX
1.2K 1/4W 5%	3	R113,202,215	0062-183B3-1XXX
3.9K 1/4W 5%	1	R214	0062-207B3-1XXX
6.2K 1/4W 5%	1	R107	0062-217B3-1XXX
33K 1/4W 5%	1	R207	0062-251B3-1XXX
75K 1/4W 5%	2	R211,212	0062-269B3-1XXX
100K 1/4W 5%	1	R206	0062-275B3-1XXX
110K 1/4W 5%	1	R218	0062-277B3-1XXX
220K 1/4W 5%	1	R213	0062-291B3-1XXX
1M 1/4W 5%	1	R209	0062-323B3-1XXX
1.1M 1/4W 5%	1	R203	0062-325B3-1XXX
1.2M 1/4W 5%	1	R210	0062-327B3-1XXX
2M 1/4W 5%	1	R205	0062-337B3-1XXX
3.3M 1/4W 5%	1	R204	0062-347B3-1XXX
10M 1/4W 5%	1	R205	0062-371B3-1XXX
100ohm POT	2	VR101,102	0945-00814-0000
LM305 REG	2	U1,2	0945-00813-0100
555	1	U6	0929-00810-450
LM3900	1	U3	0945-00813-0200
4N28	1	U4	0945-00813-0300
A15F RECTIFIER	5	D101-106	0945-00804-0200
IN4001	3	D106,204,205	0945-00804-0300
IN4148	3	D201-203	0945-00804-0500
2N2905	2	Q102,105	0945-00808-0300
2N4401	1	Q201	0945-00804-0400
BATTERY 3.6VDC 60DEG-C	1	B101	0017-00003-0377
FUSE 3.8A S-BLO	1	F1	0945-00808-0400
FUSE CLIP	2	FC1A,1B	0017-00003-0214
TIE WRAP	1	TW1	0945-00814-0300
FERRITE BEAD	2	FB1,2	0017-00009-02
FERRITE MOUNTING HW	2	FBMH1,2	0017-00033-01
22uH INDUCTOR	1	L101	0945-00814-0200
FUSE TAG	1		M051-00945-A004
SYSTEM TAG	1		M051-00945-A009
P.C.B.	1		A080-90412-U000
HEAT SINK ASS'Y	1	HSA1	A945-00008-0000
( SEE HS ASS'Y DRAWING "XX NOTE" )			
4-40 X 10 SLT RND	2	MH HSA 1A,2A	0017-00101-0072
4-40 HEX NUT	2	MH HSA 1E,2E	0017-00103-0002
WSH 4-120-.250-018	4	MH HSA 1B,1D	0017-00104-0071
		MH HSA 2B,2D	
3PIN P.C. MOUNT CONN. (MALE)	1	J6	0017-00021-044
9PIN P.C. MOUNT CONN. (MALE)	1	J3	0017-00021-042
15PIN P.C. MOUNT CONN. (FEMALE)</td			



#### DESIGNATION LIST

<u>DESIGNATION NO.</u>	<u>DESCRIPTION</u>
C1-C14	0.1 MFD +80-20% AX. CER.
J1-J7	EDGE CONNECTOR
L1-L8	FERRITE BEAD
	NON-REFERENCED KK156-14ST PC BOARD

#### CROSS REFERENCE LIST

<u>DESCRIPTION</u>	<u>QTY</u>	<u>DESIGNATION NO.</u>	<u>PART NOS.</u>
0.1 MFD	14	C1-C14	0339-00800-0010
FERRITE BEAD	8	L1-L8	0339-00804-0015
100-POS	7	J1-J7	0339-00804-0014
KK156-14ST	1		3000-16367-1400
P.C. BOARD, BLANK	1		A080-91455-A000

#### REVISIONS

PROJECT ENG: DAVE OTTO	USED ON PROF. PACMAN	Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.	
DO NOT SCALE DWG.	HEAT TREAT	SCALE	FULL NO. REQ'D 1 PER
DIM. TOLERANCES UNLESS SPECIFIED	DRW. / /	MAT'L.	ASSY. DWG. BACK PANEL
FRACTIONAL	CKD.	FINISH	PART NO.
DECIMAL	7/5/83		M051 - 00114 - A092
HOLE DIA	+0.02		
	0.00		

2 1

2 10

2

2

2  
15

2  
16

2 17

**A082-91455-A000  
BACK PANEL  
DNA SYS XVI**

DNA SYS XV

## REFERENCE LIST

QTY      DESIGNATION NO

PART NOS.

0339-00800-0010

0339-00804-0015

0339-00804-0014

3000-16367-1/02

A080-81455-1000

### REVISION

*Bally* / MIDWAY MFG. CO.  
FRANKLIN PARK, ILL.

USED ON PROF. PACMAN

**ASSY. DWG. BACK PANEL**

A082-91455-A000 M051 - 00114 - A09

1/5/83

PROFESSOR PAC-MAN

## OPTION SWITCH SETTINGS

THE REMAINDER OF YOUR NEW GAME'S MOST COMMON OPTION SETTINGS ARE CONDUCTED DURING THE THE SELF-TEST MODE AND WILL BE COVERED IN DETAIL IN THAT SECTION OF YOUR MANUAL.

